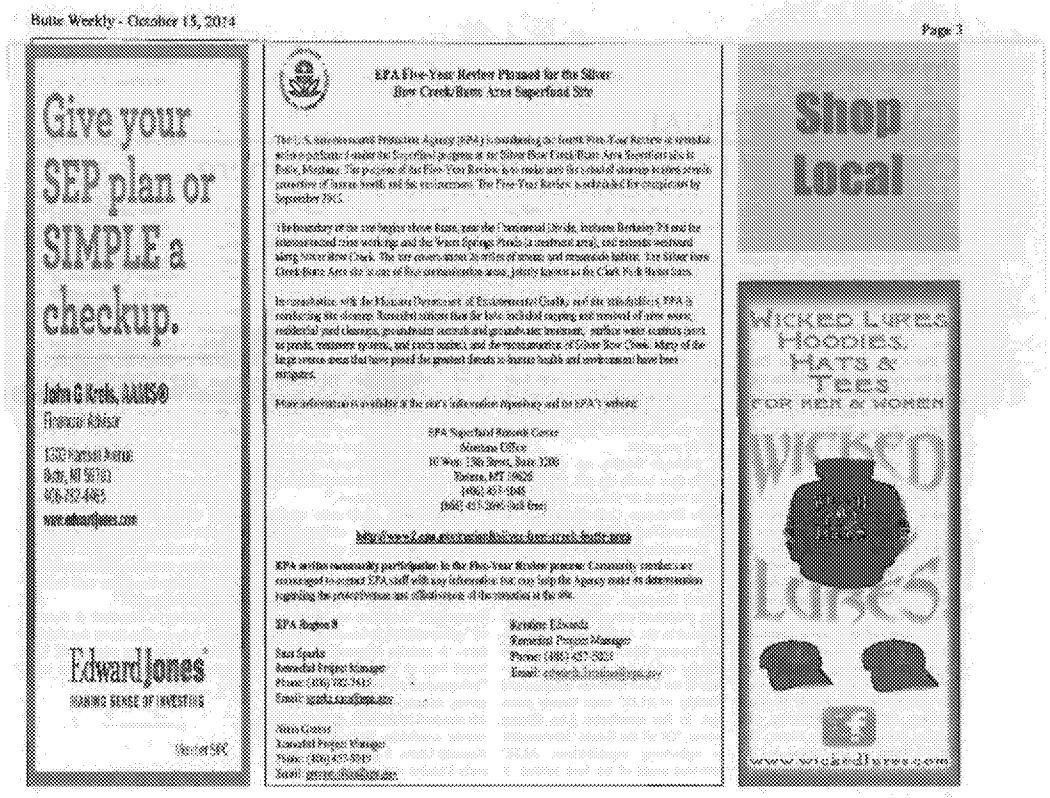
Appendix I: Press Notice



Butte Weekly - October 15, 2014 Page 3

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EPA Five-Year Review Planned for the Silver Bow Creek/Butte Area Superfund Site

The U.S. Environmental Protection Agency (EPA) is conducting its fourth Five-Year Review to evaluate actions performed under the Superfund program at the Silver Bow Creek/Butte Area Superfund site in Butte, Montana. The purpose of the Five-Year Review is to make sure the selected cleanup actions remain protective of human health and the environment. The Five-Year Review is scheduled for completion by September 2015.

The boundary of the site begins above Butte, near the Continental Divide, includes Berkeley Pit and the interconnected mine workings and the Yearn Springs Ponds (a southwest area), and extends westward along Silver Bow Creek. The site covers several hundred square miles and numerous habitats. The Silver Bow Creek/Butte Area site is one of five contamination areas, jointly known as the Clark Fork Basin sites.

In consultation with the Montana Department of Environmental Quality and the stakeholders, EPA is conducting the cleanup. Remedial actions thus far have included capping and removal of mine waste, residential yard cleanups, groundwater controls and groundwater treatment, surface water controls (such as ponds, treatment systems, and leach wastes), and the reconstruction of Silver Bow Creek. Many of the large source areas that have posed the greatest threats to human health and environment have been mitigated.

More information is available at the site's information repository and on EPA's website:

EPA Superfund Records Center
Montana Office
10 West 15th Street, Suite 3200
Helena, MT 59626
(406) 457-5045
(800) 457-3076 (toll free)

http://www2.epa.gov/superfund/silver-bow-creek-butte-area

EPA invites reasonably participation in the Five-Year Review process. Community members are encouraged to contact EPA staff with any information that may help the Agency make its determination regarding the protectiveness and effectiveness of the remedies at the site.

EPA Region 8
Sara Sparks
Remedial Project Manager
Phone: (406) 782-7435
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Jennifer Edwards
Remedial Project Manager
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Email: cotsworth.steve@epa.gov

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PARTY PASTIES
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EPA Five-Year Review Planned for the Silver Bow Creek/Butte Area Superfund Site
GRAB A PLATE & EDUCATE!
A Complimentary Dinner Presentation:
Making The Residential Care Decision Work
Where: Big Sky Senior Living Mt. View Room
When: Thursday, October 16th.
Time: 6 p.m.
RSVP: by calling (406) 494-4900
Hosted By:
Mariposa

PUBLIC OPEN HOUSE MEETING
ON THE
EPA FIVE-YEAR REVIEW

The US Environmental Protection Agency is conducting a 5-Year Review of the Superfund cleanup in and around Butte. A vital part of that effort is comments from the public on that effort.

COME TO THE MEETING AND MAKE AN IMPACT:

May 7, 2015 at the Butte Public Library, 226 W. Broadway Street, 6-8 PM

- Become Well Informed
- Understand and Participate in Decisions about the Environment we all share
- Learn about the Process and Voice your Opinions

The public must be involved for a successful effort. CTEC is committed to helping ensure the public has the information and the opportunities to participate.

CTEC is a group of volunteer citizens who work with the Environmental Protection Agency, the state of Montana, responsible parties, and others to make the Superfund process and cleanup decisions in the Butte area understandable to everyone.

Office: 27 West Park – Butte **Monday - Thursday 10:00 – 3:00 pm**
Phone: 723-6247 **E-Mail:** ButteCTEC@hotmail.com
Website: ButteCTEC.org **Facebook:** CTECbutte

Appendix J: Interview Forms and Community Correspondence

Site:	*Silver Bow Creek/Butte Area*	**EPA ID No:**	*MTD980502777*
Interviewer:		**Affiliation:**	
Subject:	*Matt Vincent*	**Affiliation:**	*Chief Executive, Butte-Silver Bow*
Subject Contact Information:		**Phone:**	
Time:	*10:00 AM*	**Date:**	*September 30, 2014*
Location:	*Butte-Silver Bow County Courthouse*		
Interview Format:	☒ *In Person* ☐ *Phone* ☐ *email* ☐ *Mail*		
Interview Category:	*Local Government*		

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes. I have worked around Silver Bow Creek since 1995 in different capacities.

2. Do you feel well informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

   Yes. I have been getting information from the state agencies, who are the lead for Silver Bow Creek. I wish the same level of success and activity at Silver Bow Creek applied to the rest of the OUs. We're making progress. When I was interviewed for the last FYR, I was in a different position. Now as the Chief Executive, I'm in a position to try to get the other OUs to the status of Silver Bow Creek.

   EPA has been very responsive to my and local governments' concerns about getting to the end game like Silver Bow Creek has gone. In particular, BPSOU. MDEQ has been responsive to a lesser extent.

   We still have a ways to go. We need to figure out a final plan for the eastern area of the Site. If you had to put your finger on an issue about what the public is concerned about, it's the Berkeley Pit. We need to talk about what's going on at the Berkeley Pit. Anytime there is something that is unmanageable and needs to be cleaned up in perpetuity, there needs to be discussion. Even I don't know the end game for the pit. All I know is that there is a critical water level that will be reached in 10 years or so, but I don't know anything beyond that. We need to do better.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   Not as it relates to the remedy. We've had vandalism in the parks, park structures.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

No. I think the state's in the process of redefining the TNDLs for Silver Bow Creek so we're paying attention to that. We have to balance that with our ability to meet those standards. We have a naturally mineralized area that's unlike any other place. We want to maintain and improve the health of the creek first and foremost and want to make sure those limits are reasonable. We have background levels of zinc and copper in the creek and we can't be expected to go below those background levels. I know that's part of the Consent Decree – looking at alternative standards

5. Are you aware of any changes in projected land use(s) at the Site?

   No. we are wide open to do what we have to do in a land management perspective to do what's best for the creek. What are we going to do in the historic SBC channel – I don't think we have any commercial zoning in that corridor. We're here to cooperate.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   I think PitWatch – that's something our local government is in charge of – we need to start being more aggressive to use that as a way to disseminate information. That's an educational tool that was put together with funding from Atlantic Richfield. The educational tool was put together by the public advisory committee. The shortcomings and criticisms about not knowing about the BMFOU is probably more a function of the fact that we don't have a seat at the table with the BMFOU the way we do with BPSOU (where we are a PRP because our stormwater system was tagged as a conduit). When we're not at the table, we're left out. We've proven our value and cooperative nature in our discussion with the BPSOU, so we should be more involved in some of the discussions and decisions that are made about mine flooding. It stands out as one of the biggest disappointments in my professional career with EPA – when we as local government submitted 90 pages of comments for the Consent Decree for Berkeley Pit and not one thing was changed. We can do better there.

7. Do you have any comments, suggestions or recommendations regarding the project?

   It's not just taking the model from Silver Bow Creek and applying the remedy, we need restoration and collaboration. We've been doing work on BPSOU since 1988. But we should still try to do what's possible to incorporate restoration. We need better progress on the west side soils OU.

   My two young boys are probably the first generation of people here where when you ask them where's your favorite place to fish, they would say Silver Bow Creek. This wasn't possible in the past.

   95 percent of the project has been successful. It's getting to the point now where all the things that we do as local government and the agencies that are in charge of the unfinished Superfund business in Butte. It's all done for the protection of Silver Bow Creek. Since I started working on Silver Bow, I never thought that in my lifetime we could catch a trout in Silver Bow Creek. Remarkable. That's the only word I can think of.

As a result we're doing a lot with stormwater here as a municipality. Things are underway with a 31 million dollar upgrade to our sanitary sewer treatment system.

There was a time where the mine waste contamination in Silver Bow Creek and nutrient contamination from sewer overall dampened the toxicity. Right now our nutrients are the limiting factor for the stream.

I understand some people have had issues with EPA. It is not an issue now with my new role. I feel positive about the relationship I'm forming with EPA.

Would like to see the same level of progress and effectiveness I've seen on Silver Bow Creek and the Middletown dam at other parts of the Site. We have to integrate the restoration that the state oversees with the remediation that EPA oversees. That hasn't been the case for the BPSOU. In fact, it pushed away from the bargaining table on the paired tailings and some of the things that have remained at the priority soils. It's been 4 years since the consent decrees were comprehensive. Butte-Silver Bow County is finally able to get back to the table with DEQ, NRD, ARCO, Butte-Silver Bow County. Last spring, we've reconvened those discussions. There's renewed commitment and understanding of where we need to be.

We really need more information and more progress related to understanding of the Berkeley pit. In the absence of good understanding on our part and where we are in the process, you get these alarmists, let's call them, who are saying that the Pit is overflowing, the sky is falling. I know it's not true but there's no information to the contrary. We need to be more proactive. People are sick of hearing about the critical water level, and that we have all the time in the world. That's no longer true. The time delta is now within the timeline of everyone's existence. We need to understand whatever adjustments or improvements that need to happen with the treatment plant. We need to know what's going to happen to the water. We need to keep options open and look to new technologies.

One of the complaints I've heard from some people is that there have been technologies brought to light that could have worked but because of the PRP's access they weren't allowed to try it.

The Rocker OU has an effect on the Rocker residents. The small area has resulted in the closure of wells in the area. Why can't we combine remedy with restoration for Rocker?

Site:	*Silver Bow Creek/Butte Area*	**EPA ID No:**	*MTD980502777*
Interviewer:		**Affiliation:**	
Subject:	*Julia Crain*	**Affiliation:**	*Butte-Silver Bow County Special Project Manager*
Subject Contact Information:		**Phone:**	
Time:		**Date:**	
Location:			
Interview Format:	☒ *In Person* ☐ *Phone* ☐ *email* ☐ *Mail*		
Interview Category:	*Local Government*		

8. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes.

9. Do you feel well informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

   I do, as an employee of the government, working in a job where it's my job to know what's going on. My job is a special projects planner for Butte-Silver Bow. I support the Superfund Coordinator, John Sesso, and Tom Malloy and I administer some of the tasks for Butte-Silver Bow.

   We receive a lot of questions via the PitWatch website – receiving requests from schools around the region for information – including from Idaho. That resource is really helpful. We redesigned it last year and it has been a successful redesign.

10. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

    There was trespassing in the Mountain Con building (the hoist) in 2013 – but the trespasser was quickly captured by law enforcement.

    People aren't destructive of the infrastructure. They are aware of the history and protect those things.

11. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

    No.

12. Are you aware of any changes in projected land use(s) at the Site?

    No.

13. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

    Yes. EPA has done a good job. I know that the RPM has a lot of one-on-one conversations with residents.

14. Do you have any comments, suggestions or recommendations regarding the project?

    No.

Site:	*Silver Bow Creek/Butte Area*		**EPA ID No:**	*MTD980502777*
Interviewer:			**Affiliation:**	
Subject:	*Resident #1*		**Affiliation:**	*Resident*
Subject Contact Information:			**Phone:**	
Time:			**Date:**	
Location:				
Interview Format:	☐ *In Person*	☐ *Phone*	☐ *email*	☐ *Mail*
Interview Category:	*Resident*			

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes. I grew up in Anaconda (wife and I). We grew up in the shadow of the Anaconda smelter. Worked at the smelter in the 1970s and 1980s – smelter maintenance – in small spaces where you wouldn't think humans could work. OSHA couldn't believe that there were people working in those places. I used to smoke – but a cigarette tasted like candy because of all the sulfur. I knew I was being poisoned. I can tell you more about Anaconda. There's a big difference – they haven't really shut down the mine. In Anaconda, all the mountains – there are no trees there. But here, they shut it down in 1980 and the trees are all coming back. The vegetation is starting to grow again. I've been watching the cleanup they've been doing at Silver Bow Creek and I'm pretty impressed with that. Because I know this is one of the very first tributaries of Clark Fork that goes into the Columbia. I do believe in a clean environment because we're leaving it for our kids.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   Anytime you do a project, it's based on money and there are limitations on how fast you can go and how much can be spent. I think they are traveling forward at a decent rate of speed. I'd like to see more done. These cleanup jobs pay a good wage for working people. What they're doing is a positive thing in my eyes.

3. What have been the effects of the Site on the surrounding community, if any?

   Somewhat of an effect. A lot of the people that I work with – blue collar workers, mostly who don't recycle their pop or beer cans – but some of them have a pretty negative attitude about this. But most people realize that this needs to happen.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   The only real thing I see is they went and reclaimed the mine – the Mountain Con. They made the walking trails. You can see that it was once a dirty mine and they are trying to make it positive. I've noticed a lot of vandalism up there. It makes me sick. Kids are up there destroying things.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   Yeah, there's quite a bit of information in the Montana Standard, our paper here. If you follow the Standard and the local news, there's quite a bit of information in the media about what's going on with the cleanup.

   I've gone on PitWatch a couple times – it's pretty much the same thing. How big that is and how deep it is. It's scary. If it ever overruns, we would be in so deep.

   The newspaper and the news are helpful. Mailings and flyers – I get them about once or twice a year about the PitWatch. They're interesting and I peruse those.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   No. that was one of the things. You could own a well if you were grandfathered in. we bought the property in 1988 and we were told that we could build a well but only for irrigation. It didn't happen. It's a big expense to just grow grass.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   I believe what EPA is doing is a positive thing, a good thing. Of course everyone would like to see everything happen faster. I'm really impressed with what they're doing, going into sites and changing them into recreation areas and parks. We go up to the Mountain Con park quite a bit with the dog. It's quite a sight. Some of the walkways are steep. There's a lookout and you can see the whole city of Butte. Really impressive.

Site:	*Silver Bow Creek/Butte Area*		**EPA ID No:**	*MTD980502777*
Interviewer:			**Affiliation:**	
Subject:	*Resident #2*		**Affiliation:**	*Resident*
Subject Contact Information:			**Phone:**	
Time:	*02:00 PM*		**Date:**	*September 30, 2014*
Location:				
Interview Format:	☒ *In Person*	☐ *Phone*	☐ *email*	☐ *Mail*
Interview Category:	*Resident*			

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   I believe that the EPA and MDEQ should be compelled to adopt new outreach methods to the public in a way that 21st century citizens receive information. The younger population is not being reached. I also think that graphically, putting words in a paper doesn't work. There should be more artistry and design put into the way that information is communicated – in both print and social media. I believe that it would be valuable for the project managers and EPA to consider new ways to deliver information to the community. Social media channels, I'd like to see more sophisticated and modern ways of communication. It's difficult, since it's a very complicated issue.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

3. What have been the effects of the Site on the surrounding community, if any?

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

Site:	*Silver Bow Creek/Butte Area*		**EPA ID No:**	*MTD980502777*
Interviewer:			**Affiliation:**	
Subject:	*Resident #3*		**Affiliation:**	*Resident*
Subject Contact Information:			**Phone:**	
Time:	*03:00 PM*		**Date:**	*September 30, 2014*
Location:				
Interview Format:	☒ *In Person*	☐ *Phone*	☐ *email*	☐ *Mail*
Interview Category:	*Resident*			

8. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes.

9. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   Unfinished. Work done so far is good.

10. What have been the effects of the Site on the surrounding community, if any?

    Not much. Community doesn't realize what's being done, what has been done. Over time, Blacktail Creek and Silver Bow Creek have been cleaned up west of Main Street.

11. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

    No. Overall, it's been done well. I'm concerned about plantings – something other than grasses.

12. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

    Yes. Newspaper. Meetings – in particular, with a speaker presentation at the Butte Natural Damage Resource Council.

13. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

    No.

14. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

    A lot of work – it's more costly than it has to be. Montana Tech was given $2 million two years ago to do something other than plant the grasses. Grasses do a good job, but there's

some non-native grasses. If they stayed with native grasses – Blue Fescue is a native clump grass that's remarkable at holding up soils. I would do the same work for 10% of the cost. Tech isn't maintaining or planting in large areas. We don't know the consequences of the non-native species yet. There are some consequences of non-native wheat.

The $2 million paid for groups of trees, also along Silver Bow Creek. I don't know about Silver Bow Creek because it's different soil. Up on the hill, by the time they walk away (after 8 years) they will have spent $400 to $600 per tree. They've had to dig up bad soil, plant the soil and set up a watering system. By contrast, rather than digging up, by the time I'm done it will be $40 per tree.

They're choosing trees that can't live with the 18-inch mine cap. I'm planting Aspens – once they get to toxic soils, roots will move and avoid. Butte-Silver Bow plants pods/groups of trees in odd places – the side of a hill, etc. Planting in small areas with hopes that they would spread out, they should use a 2-acre area and maintain the plants.

Don't fault anybody – their aims and my aims are the same. Montana Tech is focusing not on trees but "native forbs" – they've spent $0.75 million with maybe 1,000 plants that are still alive. It's a really low percentage. The person who headed it up ended up resigning. No results. Greenhouse and administrative overhead.

Beyond paratailings, that hasn't been done yet – but they have to haul away soils – can't just cover them.

People haven't recognized that cleaning up the upper and lower part of Silver Bow Creek has been beneficial to the environment and health. It has brought back wildlife, which people don't notice.

A lot of people say "It's just Atlantic Richfield money."

The grasses near the road took 800-1000 cubic yards of soil to regrade it. While it's nice and it was a good job, but they didn't have to do it – they could have put in nice plantings.

The citizenry of Butte saw all the grasses on the hill and initially were thrilled that there was green. They looked for trees – they didn't just want grasses.

Site:	*Silver Bow Creek/Butte Area*		**EPA ID No:**	*MTD980502777*	
Interviewer:	*Treat Suomi*		**Affiliation:**	*Skeo Solutions*	
Subject:	*Resident #4*		**Affiliation:**	*Resident*	
Subject Contact Information:			**Phone:**	*(406) 490-0281*	
Time:	*01:30 PM*		**Date:**	*November 3, 2014*	
Location:					
Interview Format:	☐ *In Person*	☒ *Phone*	☐ *email*	☐ *Mail*	
Interview Category:	*Resident*				

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes. I have been following the Superfund cleanup since about 1992. Then since about 2002. I started looking at the BPSOU area in more detail. I am somewhat familiar with the SSTOU down to Warm Springs Ponds. I attended public meetings and been involved in various committees over the years.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   My overall impression is positive. The stormwater has been an issue in the last five years. It has had a high visibility for the work done in the last five years. We can see a lot of increase in gutter work directly stormwater. There was work putting a liner in the underground pipes. Those are highly visible actions with lots of presentations about it. It sounded like there was a bunch of containment and success. There are sediment basins all over the town where some of the groundwater is collected – those areas have to be monitored and the sediment dredged out. A lot are surrounded by chain link fences. I wish we could change the appearance of these areas that are behind chain link fences. These areas are pretty unappealing. I am not sure if this is something EPA can deal with or if it is the next stage of restoration. They put in hydrologic devices in the last several years and I don't know that we have heard much about how they are doing. It is a bit frightening that they will have to be maintained in perpetuity. I don't have a sense of how often they have to be maintained.

   I am familiar with the work redesigning the lower area one ponds and treatment system. It seems like the results coming out to the creek is getting cleaner and cleaner and the vegetation along the creek has been staying in place.

   The Granite Memorial continues to have work done on it. Foreman Park and the trails are so beloved. The City does a nice job of keeping them clean and accessible. The more structures they put in the more maintenance is required. There seems a difficulty in the local government to keep up on trash and features. But up to this point they are staying well maintained.

   Another area of concern to me is the vegetation remediation on the caps. On one hand, EPA has listened to citizens with ecological background and has modified the seed formulas. For the most part, I think they have used inappropriate vegetation on the cap. I understand

originally they had restrictions to what they initially put down. But I think our short growing season and high altitude and much of the vegetation is for a more temperate zones. The grass stalks do not decompose form year to year. We end up with areas of thick layer of litter that don't decompose and so they retard natural plant succession. Rabbit brush is establishing and becoming monoculture. We are not getting a natural diverse vegetation coming in. So, I am concerned about how much maintenance will be required on the caps because of the species issue.

I am not sure who is in charge of BRES, if there has been a report, how many sites are identified every year and how they are addressed. I also don't know if they have an ecologist on staff working on BRES or not.

A real sticking point for Butte is the Parrot tailings from a smelting site. The civic center and some shops are sitting on top of the tailings. The former ROD said there was NFRAP. Further analysis has given us more information about that area and so there is still a large group of scientists that feel like it is well enough contained that it could be removed. That metro storm drain area is still a point of contention. I recall a year ago there was a meeting and the EPA lawyer said they would look into it and help us address it. I haven't kept up and don't know if there was another explanation or if that is still a possibility to deal with it.

3. What have been the effects of this Site on the surrounding community, if any?

In the last five years, it is hard to say. But overall, the effect on the community has been a complete…it is astounding how this community that was a mining community and blue-collar community has turned around and there are a lot of scientists here now because of this site. They bring a high level of interest to the community. They are willing to share their data, share their information and hold community meetings (where allowed). It is remarkable how there is a huge variety of diversity in people here now. It would be interesting to see what percentage of our economy comes from the environmental groups and the various governmental agencies. As well as all the contractors. It really is a tremendous scientific community now and it wasn't 30 years ago. It has had a huge impact on the public school system. They go out and collect samples and look at the water and the bugs, it is a great opportunity for the students in the area.

Whenever anything major is happening, there certainly are there those that come out criticizing, saying there hasn't been enough done. But there is space for everyone to have a very vigorous conversation about the issues.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

I think there has been some level of vandalism on the caps in the neighborhoods/towns. They are ecologically fragile – the soil isn't deep, the vegetation is fragile, They have driven four wheelers through them and torn up at times. But, it probably isn't much different than what happened previously on the capped areas before they were cleaned up. These areas usually

seem to continually get addressed. They put up boulder barricades when they find problems, etc.

In the west side soils area, cutting fences has been a problem. In BPSOU, I don't think fence cutting has been an issue.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   I think they have tried through CTEC and announcements and in the local newspapers. CTEC and the Pitwatch groups have been used by EPA to get messages out through newsletters that area free. CTEC is charged with trying to educate the public. I think EPA has made a really good effort. There are some areas where the community (Greely neighborhood, for example) where they form a group and sought info themselves. The Greely neighborhood was concerned about dust, for example.

   We've talked about the social media aspect before and I don't know much about that but it is where a huge part of the community is sharing information. And that is probably a big area to reach out to but I don't know how to do that. People don't like to go to meetings anymore. All of our traditional groups, service clubs and women's groups, are not recruiting new members. It is not how people are getting together and sharing information. Meetings are a tough way to get information across.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   No.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

   Not anything in addition to what we've already discussed.

Site:	*Rocker OU*	**EPA ID No:**	*MTD980502777*
Interviewer:	*Treat Suomi*	**Affiliation:**	*Skeo Solutions*
Subject:	*Albert Molignoni*	**Affiliation:**	*Chairman of the Board for the County Water and Sewer District of Rocker*
Subject Contact Information:	*1108 Grizzly Trail Butte, MT 59701*	**Phone:**	*(406) 723-9365*
Time:	*09:56 AM*	**Date:**	*November 3, 2014*
Location:			
Interview Format:	☐ *In Person* ☐ *Phone* ☐ *email* ☐ *Mail*		
Interview Category:	*Local Government*		

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes. EPA and ARCO haven't had success with the work that they have completed. The injections they did have not worked properly. We are still under the restriction of the five-year control area. It was only supposed to take five years for us to regain access to our groundwater, and that hasn't happened. It was over 12 years ago when that work started, so we should have had our groundwater back in the control area again. We are disappointed as a community because we were promised that this would do the job and it didn't. The only option now is to do it again or remove the source material and the Rocker OU.

2. Do you feel well informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

   No. An official (EPA, MDEQ and ARCO) should come in and explain to the Board why things haven't happened the way they were supposed to. Now we are buying water from Butte-Silver Bow and this is very expensive and inconvenient. The Board is the best vehicle for disseminating information to the local community.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   Not that I know of. The property is pretty barren.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

   The new guidelines for arsenic are the only ones I am familiar with.

5. Are you aware of any changes in projected land use(s) at the Site?

   No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

No, they haven't. There are only a few wells they are testing and there are some hand-dug wells that are not being tested. These hand-dug wells are older wells that have been around for a long time. The Board has not received information on why some wells are sampled and other wells are not.

Meeting with the Board is the best way to communicate information to the community. The Board meets every third Tuesday of the month at 7 p.m. at the Rocker Community Fire Hall. A phone call to the Chairman of the Board would allow scheduling time with the Board.

7. Do you have any comments, suggestions or recommendations regarding the project?

I am not a scientist but I know the project didn't work as planned. One of our prior board members who had a Ph.D. explained that sometimes these things that work in the lab do not work in the field. That's what happened here. Things didn't work out in the field the way they expected.

Site:	*Silver Bow Creek/Butte Area*		**EPA ID No:**	*MTD980502777*	
Interviewer:	*Self-Completion*		**Affiliation:**		
Subject:	*Tim Hilmo & Steve Walsh*		**Affiliation:**	*Atlantic Richfield & Montana Resources*	
Subject Contact Information:			**Phone:**		
Time:			**Date:**	*December 2, 2014*	
Location:					
Interview Format:	☐ *In Person*	☐ *Phone*	☒ *email*	☐ *Mail*	
Interview Category:	*Potentially Responsible Parties (PRPs)*				

1. What is your overall impression of the remedial activities at the Site?

   The PRPs believe the remedial action is effective. Response actions have contained contaminated water in the East Camp and West Camp systems and prevented the release of contaminated water to the alluvial aquifer and Silver Bow Creek. The requirements of the Consent Decree Scope of Work for pre Critical Water level (CWL) water treatment are being met and valuable experience in operating the treatment plant has been acquired.

2. What have been the effects of the Site on the surrounding community, if any?

   The remedy is protective of human health and the environment. Remedial activities in place prevent exposure to contaminated bedrock groundwater and surface water by humans and aquatic life.

3. What is your assessment of the current performance of the remedy in place at the Site?

   The remedy consists of many facets:

   A. *Monitoring of groundwater levels and quality has been very effective. This monitoring provides a basis to reliably estimate the timing for evaluation of effectiveness and need for modification/upgrades of the water treatment facilities and to demonstrate that hydraulic gradients are maintained so that discharges to the alluvial aquifer and Silver Bow Creek do not occur.*
   B. *Operation of the water treatment plant and integration of 100 percent of the treatment plant effluent into Montana Resources' mine process has effectively limited surface inflows to the Berkeley Pit and prevented discharges to Silver Bow Creek. Treatment plant maintenance activities have been effective.*
   C. *Waterfowl mitigation efforts have been effective.*
   D. *Institutional controls are protective and through the Pit Watch program and others, provide valuable information to the general public.*
   E. *The schedule for future remedy requirements and the remedy adequacy review has been prepared and approved by EPA, and is being followed.*

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?

Yes. Some in the Butte community question EPA's remedy strategy at public meetings, in correspondence with the agencies or in letters submitted to the local newspaper expressing their opinion. In general, the issues raised by these citizens – timing of treatment of Berkeley Pit water (draining of the Berkeley Pit) and the CRITICAL WATER LEVEL – are similar to the issues raised by the public in 1994 and considered by the agencies (and documented in the ROD responsiveness summary) at the time the final remedy was selected. Recently, there has been renewed public interest in the slope stability of the walls of the Berkeley Pit. This year, at EPA's direction, the PRPs have conducted investigations that provide additional information concerning the structural stability of the walls of the Berkeley Pit.

5. Do you feel well informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

   Yes. The PRPs communicate frequently with EPA and MDEQ project managers.

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

   Not at this time.

Site:	*Silver Bow Creek/Butte Area*		**EPA ID No:**	*MTD980502777*
Interviewer:	*Ryan Burdge*		**Affiliation:**	*Skeo Solutions*
Subject:	*Resident #5*		**Affiliation:**	*Resident*
Subject Contact Information:			**Phone:**	
Time:	*01:30 PM*		**Date:**	*September 30, 2014*
Location:				
Interview Format:	☒ *In Person*	☐ *Phone*	☐ *email*	☐ *Mail*
Interview Category:	*Resident*			

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

   Yes, I have lived in the area for 40 years and am aware of the cleanup.

2. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   I think the stream cleanup is great and it is much nicer than before. Clearly, a lot of effort went into the cleanup and it shows. The vegetation looks great and the whole area is beautiful. I now regularly see elk in the area, which I never did prior to the cleanup.

3. What have been the effects of this Site on the surrounding community, if any?

   I do not think there is enough appreciation for the reclamation, but I hope people take advantage and use the areas.

4. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

   I have not heard of anything significant.

5. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

   Articles in the paper are good since they can access everyone.

6. Do you own a private well in addition to or instead of accessing city/municipal water supplies? If so, for what purpose(s) is your private well used?

   I do have a private well. It is two miles from the stream, upslope on a bench. It has been tested and it clean.

7. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

I think the cleanup is fantastic and really went above and beyond what might have been expected.

Site:	*Silver Bow Creek/Butte Area*		**EPA ID No:**	*MTD980502777*	
Interviewer:	*Jenni Harris*		**Affiliation:**	*Atlantic Richfield*	
Subject:	*Tina Donovan*		**Affiliation:**	*TREC, Inc.*	
Subject Contact Information:	*tdonovan@treccorp.com*		**Phone:**	*(406) 490-5764*	
Time:	*01:30 PM*		**Date:**	*December 17, 2014*	
Location:					
Interview Format:	☐ *In Person*	☐ *Phone*	☒ *email*	☐ *Mail*	
Interview Category:	*O&M or Remedial Contractor*				

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   The project is well run. Schedules are adhered to, and the site is well maintained. The vegetative cap at the site is in excellent condition and vegetation is robust and relatively free of noxious weeds. We found no evidence of erosion at the site. Site security is maintained with a fence, which is in excellent condition. Recently, tanks that had been on site for over 10 years were removed. Although the site is fenced from public use, the tank removal enhanced the area's visual appeal. Groundwater conditions are monitored regularly. Although on-site groundwater is still above water quality standards in some wells, we found no evidence of groundwater degradation.

2. What is your assessment of the current performance of the remedy in place at the Site?

   The remedy is simply to monitor conditions. This is being carried out as scheduled. The groundwater monitoring schedule is excessive, if anything.

3. What are the findings from the monitoring data? What are the key trends in contaminant levels documented over time at the Site?

   The monitoring data indicate that, in general, groundwater arsenic concentrations have decreased since just after site remediation. Arsenic concentrations appear to be leveling off, although samples from one well indicates an increasing trend. Nearby domestic wells show no change in arsenic concentrations over time.

4. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

   There is not a continuous on-site O&M presence. Personnel are on site quarterly for four to five days at a time, to perform groundwater monitoring. Quarterly monitoring occurs in February, May, August and November of each year. This monitoring consists of water level measurements in 50 wells and at four surface water sites. Thirty-four wells (31 monitoring wells, two domestic wells and one public water supply well) are sampled for water quality. Although the point of quarterly groundwater monitoring is not to inspect the site, personnel do make note of any site problems, and steps are taken to remedy any problems.

In addition to groundwater monitoring, there is an annual site inspection, typically in July or August of each year. The site is inspected for the condition of the vegetative cover, presence of noxious weeks, site security and site drainage. A form is completed and submitted to the Project Coordinator and Operations Project Manager. Any needed maintenance is noted and taken care of.

5. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

There have been no changes in O&M requirements or maintenance schedules in the last five years, or since the O&M Plan was put in place. In the last three years, there have been deviations from the sampling routine. In an attempt to assess potential groundwater arsenic loading to surface water, surface water monitoring occurred in November 2011 and February 2014. Surface water monitoring consisted of collecting water quality samples and flow measurements at three surface water sites. Results of the surface water monitoring indicated that site groundwater does not load arsenic to surface water at a measurable level.

In the past year, several additional wells were sampled for water quality, and the analytical list was expanded at several wells. The additional sampling was performed to assist in completing a Site Conceptual Model. Expanded sampling occurred in May and November of 2014. Data collected in May 2014 was inconclusive. Data collected in November 2014 has not yet been fully interpreted.

None of the additional monitoring affects the protectiveness of the remedy.

6. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.

New fencing was installed in 2011, at the request of the agencies. Tanks tha had remained on site from an in-situ treatment prior to development of the O&M Plan were removed in 2014.

7. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

Several shallow alluvial wells are prone to heaving of the internal casings. When this occurs, it is necessary to trim the internal casing in order to put a locking well cap in place. Initially, the contractor hired a driller to complete this task. Rather than hire a driller each time a casing needs to be trimmed, the contractor purchased an internal casing cutter. This allows the contractor to trim the internal casing themselves, eliminating the need to subcontract with a driller.

The agencies have suggested conducting surface water monitoring on an annual basis moving forward. Surface water monitoring took place in November 2011 and February 2014 and will be done again in 2015. At first glance, it appeared that February would be the best month to perform surface water monitoring; this is the quarter when surface water was most likely to be gaining groundwater. However, past experience has demonstrated that climatic conditions make February a difficult month to attain day-long steady state surface water conditions. When trying to assess interactions between surface water and groundwater, steady state conditions are imperative. Therefore, it was decided that any future surface water monitoring will occur in February if conditions allow, or alternatively, in the final quarter of the year. This will eliminate the chance of repeated attempts to sample under steady-state conditions.

8. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

Groundwater monitoring since 1998 indicates minimal seasonal variation in groundwater arsenic concentrations. The monitoring schedule could be reduced from a quarterly schedule to a semi-annual schedule. Additionally, historical water quality results show that few metals are present in groundwater at concentrations that are a concern to human health or the environment, and groundwater metals concentrations show minimal variation over time. Thus, the analytical list could be reduced.

Site:	*Rocker Operable Unit*	**EPA ID No:**	*MTD980502777*
Interviewer:	*Self-Completed*	**Affiliation:**	
Subject:	*Tim Hilmo*	**Affiliation:**	*Atlantic Richfield*
Subject Contact Information:		**Phone:**	*(406) 490-4375*
Time:		**Date:**	
Location:			
Interview Format:	☐ *In Person* ☐ *Phone* ☒ *email* ☐ *Mail*		
Interview Category:	*Potentially Responsible Parties (PRPs)*		

7. What is your overall impression of the remedial activities at the Site?

   Remedial activities at the site have been completed and the site is in the Operations and Maintenance (O&M) stage. The site is managed in accordance with the site approved O&M Plan. The specific objectives of the Rocker OU O&M program are as follows:

   - *Confirm treatment results and track groundwater quality trends;*
   - *Document the long-term efficacy of the iron/limerock/oxidant groundwater treatment process carried out in 1997;*
   - *Document potential migration of the plume, if any;*
   - *Document that nearby public or domestic water supplies remain unaffected by the Rocker site; and*
   - *Document changes in water table elevation and flow patterns following excavation and treatment of the shallow alluvial hydrostratigraphic unit.*

Currently, additional data has been collected (2014) and is being evaluated to develop an updated Conceptual Site Model in Q1 2015.

8. What have been the effects of this Site on the surrounding community, if any?

   A Controlled Groundwater Well Area was established and a ban on additional wells is in place and an Alternate Water Supply is in effect for the Rocker community. However, the community (County Water and Sewer District of Rocker) has previously voiced concern regarding increased water rates to their current supply. They have also asked when their groundwater supply may be usable again.

9. What is your assessment of the current performance of the remedy in place at the Site?

   The remedy appears to be protective in that none of the contingency wells have been triggered to implement a contingency remedy. However an increasing arsenic trend has been observed in some wells internal to the site that has led to the additional sampling and development of the Conceptual Site Model mentioned above.

10. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?

The County Water and Sewer District of Rocker have previously inquired about their water supply. They were concerned with Butte Silver Bow tax rate increases and a timeframe that their groundwater would be available again.

11. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

    Yes

12. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

    Possible reduction in analytes/monitoring frequency as the current groundwater monitoring program is quarterly and not semi-annual.

Site:	*Warm Spring Ponds Operable Unit*	**EPA ID No:**	*MTD980502777*
Interviewer:		**Affiliation:**	
Subject:	*Brian Wilkins*	**Affiliation:**	*Operation Contractor, Pioneer Technical Services*
Subject Contact Information:	*Pioneer Technical Services, Anaconda, MT*	**Phone:**	
Time:		**Date:**	
Location:			
Interview Format:	☐ *In Person* ☐ *Phone* ☒ *email* ☐ *Mail*		
Interview Category:	*O&M or Remedial Contractor*		

9. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   The Warm Springs Ponds is a unique site; it is a treatment facility but also a public use area. The ponds have transformed from a desolate area 20 years ago to a thriving biological system. The public is encouraged to visit the area to learn about the cleanup and result. Most people that visit do not realize it is an active treatment facility.

10. What is your assessment of the current performance of the remedy in place at the Site?

    The remedy in place works as intended. The treatment system is efficient in precipitating heavy metals.

11. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time?

    The data fluctuates throughout the year. There are elevated arsenic levels during the summer months along with pH. The influent water from Silver Bow Creek has been changing over the course of the last five years, which could potentially affect the current treatment within the ponds system.

12. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

    There is a seven-days-a-week, 365-day-a-year O&M presence. The main reason for this presence is dam safety. The main tasks for the operators of the facility are to inspect the embankments and structures and ensure the treatment system is operating as described in the O&M manual. Due to the size of the system, there is a need for presence on a regular basis.

13. Have there been any significant changes in O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

Atlantic Richfield has incorporated routine inspection procedures for protective safety devices and critical equipment. A new maintenance management system has been implemented in the last year to assist operators in completing and tracking maintenance tasks and inspections. Sampling has remaining consistent throughout the life of the project.

14. Have there been unexpected O&M difficulties or costs since start-up or in the last five years? If so, please provide details.

    There has not been any unexpected O&M difficulties or costs within the last five years.

15. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

    Due to the age of the equipment, most has met the design life. Atlantic Richfield has been in the process of updating treatment process equipment to continue to meet the requirements set forth in the UAO. New equipment is spec'd to help improve O&M efficiency as much as possible.

16. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

    No.

Site:	*Warm Springs Pond Operable Unit*	**EPA ID No:**	*MTD980502777*
Interviewer:	*Self-Completed*	**Affiliation:**	
Subject:	*Tim Hilmo*	**Affiliation:**	*Atlantic Richfield Company*
Subject Contact Information:		**Phone:**	*(406) 490-4375*
Time:		**Date:**	
Location:			
Interview Format:	☐ *In Person* ☐ *Phone* ☒ *email* ☐ *Mail*		
Interview Category:	*Potentially Responsible Parties (PRPs)*		

13. What is your overall impression of the remedial activities at the Site?

Remedial activities have been very successful and are in the O&M stage. There is an approved O&M Plan that is followed that fulfills the requirements of the two UAOs (Inactive and Active). Specifically, these tasks include:

- *Routine O&M activities (e.g., site inspections, managing lime addition).*
- *Routine surface water monitoring, sampling and analysis.*
- *Routine groundwater monitoring, sampling and analysis.*
- *Routine data management and reporting.*
- *Routine site management activities.*
- *Dam stability inspections.*
- *Other site ownership O&M as required.*

Optimization studies are ongoing to mitigate the seasonal exceedances of pH and arsenic (as mentioned below) that include installation of Solar Bees and lime reduction evaluation.

14. What have been the effects of the Site on the surrounding community, if any?

The Warm Springs Ponds have become a very popular recreation area for the community. Atlantic Richfield manages the area as a Wildlife Management Area, with goals to maximize waterfowl use, fisheries, and preservation of existing flora and fauna. The area is open to the public and provides recreational and educational opportunities such as hunting, fishing, birdwatching and hiking. Local school groups take tours of the area several times each year.

15. What is your assessment of the current performance of the remedy in place at the Site?

The Warm Springs Ponds capture the majority of constituents entering the system and the remedy is functioning as intended. Seasonal exceedances of pH and arsenic still exist, however. Optimization studies such as use of Solar Bees are ongoing and being evaluated to reduce these exceedances and increase the effectiveness of the remedy. The remedy is supporting a healthy, diverse and abundant aquatic, terrestrial and avian wildlife population as documented in the Site's Wildlife Management Plan. Annual and five-year dam inspections confirm that the dikes continue to function as designed.

16. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?

    The majority of the community sees the Warm Springs Ponds as a local recreational asset. However, as in all communities, there are a few vocal individuals who provide critical comments at public meetings or in local newspaper opinion pieces.

17. Do you feel well informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

    Yes.

18. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

    No.

Silver Bow Creek/Butte Area NPL Superfund Site 5-year Review Interview Form

Site:	*Butte Priority Soils Operable Unit*	**EPA ID No:**	*MTD980502777*
Interviewer:	*Loren Burmeister*	**Affiliation:**	*Atlantic Richfield Company*
Subject:	*Josh Bryson*	**Affiliation:**	*Pioneer Technical Services, Inc.*
Subject Contact Information:	*jbryson@pioneer-technical.com*	**Phone:**	*(406) 565-7164*
Time:	*10:15 AM*	**Date:**	*April 17, 2015*
Location:	*Pioneer Technical Services, 1101 South Montana Street, Butte, MT*		
Interview Format:	☐ *In Person* ☐ *Phone* ☒ *email* ☐ *Mail*		
Interview Category:	*O&M or Remedial Contractor*		

17. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

The project has evolved over time where the BPSOU site had focused on active construction of the soils, surface water, and groundwater remedy to its current state that is more focused on finalization of site work to ensure the remedies success and active monitoring and maintenance to evaluate the effectiveness of the remedy.

Based on surface water monitoring results, reclamation driven cleanup has been successful. We are now to a point that we are attempting to identify small remaining contributions that adversely impact standards compliance. Once these are identified we will be able to implement final reclamation strategies and move to full compliance and protectiveness of the Butte residents and the local environment.

Atlantic Richfield's maintenance approach effectively identifies and implements measures to protect the remedy work completed to date. Water collection and treatment systems are maintained on a routine basis and have proven effective in promoting consistent and efficient site operations. Some maintenance activities related to source controls are performed by Butte-Silver Bow according to the BRES program – the effectiveness of this program in site assessment and corrective measures continues to improve year to year.

18. What is your assessment of the current performance of the remedy in place at the Site?

Surface water and effluent discharge monitoring data indicates that the site remedy for soils, surface water, and groundwater is generally effective throughout the BPSOU. There are some areas remaining for improvement in regard to meeting wet weather in-stream water quality standards for dissolved copper. Implementation of upcoming storm water BMP projects will continue progress toward consistent compliance. Atlantic Richfield also believes waiver of existing Montana DEQ hardness-based standards to equally or more protective federal biotic ligand model standards would provide a better measure of remedy performance.

19. What are the findings from the monitoring data? What are the key trends in contaminant levels that are being documented over time at the Site?

Archived monitoring data indicates that total and dissolved forms of zinc, silver, copper, iron, and arsenic seen in surface water have decreased with time as the BPSOU remedy has been implemented. This is a result of both source area reclamation and the effectiveness of the groundwater collection and treatment system including the Metro Storm Drain, groundwater control features of the Butte Reduction Works, the Hydraulic Control Channel, and actual treatment occurring at the Butte Treatment Lagoons. Following major upgrades to the Butte Treatment Lagoons we have seen more consistent effluent discharge levels and improvement in effluent chemistry. No exceedances of Montana DEQ-7 aquatic standards have been observed since 2014.

20. Is there a continuous on-site O&M presence? If so, please describe staff responsibilities and activities. Alternatively, please describe staff responsibilities and the frequency of site inspections and activities if there is not a continuous on-site O&M presence.

Within BPSOU there is a continuous on-site OM&M presence. This includes a variety of Atlantic Richfield suppliers who perform routine operation and maintenance tasks related to groundwater, surface water, and soils media remedies. Butte-Silver Bow performs certain OM&M tasks related to BRES and other superfund related infrastructure with funding provided by Atlantic Richfield.. Pioneer maintains responsibility for operation and maintenance of water collection and treatment systems including the Metro Storm Drain system, the West Camp Pump Station, and all infrastructure within Lower Area One, including the Butte Treatment Lagoons. All Pioneer activities are scheduled and performed according to the current revision of the site's OM&M plan. The referenced OM&M plan contains checklists and logs to complete and document daily, weekly, monthly, quarterly, and annual inspection and maintenance tasks.

21. Have there been any significant changes in site O&M requirements, maintenance schedules or sampling routines since start-up or in the last five years? If so, do they affect the protectiveness or effectiveness of the remedy? Please describe changes and impacts.

OM&M activities have always been conducted in accord with the most recent revision of the OM&M plan approved by EPA. General schedules associated with compliance monitoring have not deviated significantly. However, recent construction activities including an extensive upgrade of the Butte Treatment Lagoons treatment system has resulted in significant change in general duties over the last five year period. In general, operations have become more efficient due to the improved instrumentation and controls. Reliability has also been improved due to the complete redundancy of the water treatment system.

Inspection, testing, and maintenance schedules allow tasks to be completed within routine working schedules, and at planned intervals. Redundant systems are in place to allow maintenance activities to be completed without upsetting routine operation and treatment.

The site upgrades improve the protectiveness and effectiveness of the remedy through the addition of additional protective measures and have enhanced our ability to maintain consistent operations through non-routine events.

22. Have there been unexpected O&M difficulties or costs at the Site since start-up or in the last five years? If so, please provide details.

There have not been any unexpected OM&M difficulties or costs within BPSOU during the last five years.

23. Have there been opportunities to optimize O&M activities or sampling efforts? Please describe changes and any resulting or desired cost savings or improved efficiencies.

As previously identified, recent upgrades have improved operating efficiency and treatment reliability of the system. Consistent operation has reduced overall lime usage while maintaining effluent treatment goals of the system. Reduced lime addition directly reduces the amount of material that must be dredged. Configuration upgrades to the primary cells have also reduced labor requirements during dredging operations. Improved control systems have reduced manual adjustments to pump systems which have increased operation efficiencies. Scheduled equipment inspections are utilized to prevent unplanned equipment failures or outages.

As operator's become more familiar with the Butte Treatment Lagoons system additional OM&M efficiencies may be identified.

24. Do you have any comments, suggestions or recommendations regarding O&M activities and schedules at the Site?

During this current 5-year shakedown period of the Butte Treatment Lagoons, and in consideration of the recently completed and pending construction upgrades, it would be most beneficial to remain consistent in ongoing OM&M activities. Additionally, changes in influent flow rates to the system and/or water chemistry could result in difficulties in continuing to meet effluent water quality standards. Once all planned improvements are made a better opportunity may arise to identify additional operational efficiencies.

Silver Bow Creek/Butte Area NPL Superfund Site 5-year Review Interview Form

Site:	*Butte Priority Soils Operable Unit*		**EPA ID No:**	*MTD980502777*	
Interviewer:			**Affiliation:**		
Subject:	*Loren Burmeister*		**Affiliation:**	*Atlantic Richfield Company*	
Subject Contact Information:	*loren.burmeister@bp.com*		**Phone:**	*(406) 723-1826*	
Time:	*1430*		**Date:**	*April 28, 2015*	
Location:	*Atlantic Richfield Company, 317 Anaconda Road, Butte MT 59701*				
Interview Format:	☐ *In Person*	☐ *Phone*	☒ *email*	☐ *Mail*	
Interview Category:	*Potentially Responsible Parties (PRPs)*				

1. What is your overall impression of the remedial activities at the Site?

   Significant progress has been made in implementation of the Remedy for all impacted media including groundwater, surface water, and solid media. The groundwater remedy of capture and treatment of impacted water has proved effective in protecting surface water. The surface water remedy is continuing to be implemented and significant improvements have been observed as evidenced by recent monitoring. The solid media remedy for mine dumps and other impacted soils in Butte has essentially been fully implemented. All known locations of solid media that exceed human health criteria have been remediated and are maintained under the BRES program.

   Additional groundwater and surface water evaluations are underway which may identify additional actions. Selection of any related projects will be subject to the outcomes of an in-progress surface water technical impracticability (TI) evaluation by the EPA and ongoing Consent Decree (CD) negotiations between the Agencies and PRPs.

2. What have been the effects of this Site on the surrounding community, if any?

   Remedial activity has had a positive impact throughout Butte. The community has benefitted not only from the improvements in their health and environment, but also, remedial activities have resulted in repurposing of areas for public use and enjoyment. Specific examples include the Granite Mountain Memorial, the Copper Mountain Sports Complex, and the Original Mine Yard.

3. What is your assessment of the current performance of the remedy in place at the Site?

   The remedy is protective of human and environmental receptors and complies with exposure levels stated within the Record of Decision for solid media. Remediation of impacted groundwater has been deemed Technically Impracticable, although it is collected and managed through a water collection and treatment system. The groundwater control area maintains protectiveness of residents of central Butte by prohibiting development of residential wells for purpose of consumption or irrigation. Effluent discharge from the Butte Treatment Lagoons system and of surface water is, in general, compliant with existing Montana DEQ-7 aquatic life standards, including during recent construction periods. The surface water remedy has not achieved compliance with the standards identified in the ROD,

but is compliant with other protective measures of aquatic acute toxicity such as the Biotic Ligand Model.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?

   Multiple complaints and inquiries regarding environmental issues and the remedial process are directed to Atlantic Richfield each year. Atlantic Richfield attempts to address each specific complaint or inquiry based on the best available information and within the framework of Atlantic Richfield legal policy and the CERCLA process. Recent contention has focused on the results and interaction of Atlantic Richfield and the EPA during completion of the Health Study and concern of ardent citizenry regarding the completeness and effectiveness of the remedy completed to date.

5. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

   Yes.

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

   Monitoring and maintenance programs associated with the remedy should be continually evaluated for effectiveness. Value-added data should be considered and, based upon experience, support performance-based decision making for adjustment of operations, performance of maintenance, or implementation of remedial actions going forward. Maintenance inspections and collection of monitoring data that does not support attainable remedy improvement or trending data should be discontinued.

Silver Bow Creek/Butte Area NPL Superfund Site 5-year Review Interview Form

Site:	*Butte Priority Soils Operable Unit*		**EPA ID No:**	*MTD980502777*
Interviewer:	*Self-Completed*		**Affiliation:**	
Subject:	*Joe Griffin*		**Affiliation:**	*Montana DEQ*
Subject Contact Information:	*jgriffin@mt.gov*		**Phone:**	*(406) 560-6060*
Time:			**Date:**	*May 15, 2015*
Location:				
Interview Format:	☐ *In Person*	☐ *Phone*	☒ *email*	☐ *Mail*
Interview Category:	*State Agency*			

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

   Implemented remedy has resulted in significant improvement towards protection of human health and the environment and compliance with ARARs in the BPSOU. However, the State believes further refinements are necessary.

   The Residential Metals Abatement Program, which is managed by Butte Silver Bow County government, is effective at protecting the citizens of Butte from exposure to lead and arsenic. The recent study that examined Butte resident's exposure to lead – which included direct involvement by the public - helped show that the Residential Metals Abatement Program is effective. Continued efforts are necessary, however, to ensure that exposure standards conform to the most current information regarding protective human health levels.

   The mine waste capping program, which is a major component of protecting human health and a major component of protecting Silver Bow Creek within the OU, has, in large part, addressed sources of surface contamination to Silver Bow Creek. Refinements to this aspect of the implemented remedy can further decrease metals loadings to Silver Bow Creek.

   Continued evaluation to determine whether reclaimed sites are operational and functional is important to protecting the implemented remedy. The program currently lacks an essential step between design/build and passing reclaimed sites on to an in-perpetuity operations and maintenance program. The program does not use the performance evaluation tool – Butte Reclamation Evaluation System (BRES) – to determine whether sites are operational and functional as required. On-going evaluations of the capping program, as well as performance evaluations of re-vegetation efforts are necessary to ensure protectiveness of the remedy and compliance with reclamation standards.

   Ongoing streamside waste removals and ground water management have been effective at significantly reducing the levels of in-stream metals. However, the State continues to disagree with the ground water remedy that left accessible, major sources of groundwater contamination in place (e.g., The Parrot, Northside, and Diggings East). Removal of such wastes would eliminate a threat to Silver Bow Creek, substantially reduce the toxicity, mobility and volume of groundwater contamination, and greatly increase the permanence and long-term effectiveness of the remedy. The State also believes further removals on the banks and beds of Silver Bow Creek are needed.

Although early source removals and rebuilding the MSD channel have had substantial effects on reducing metals discharged to Silver Bow Creek during wet weather events, additional work is necessary to meet surface water standards. The State believes the most successful approach to address wet weather contaminant loadings to Silver Bow Creek has been the retention/detention basin approach in Missoula Gulch. This approach would be equally successful in the Buffalo Gulch and MSD areas. Since removing the streamside tailings at Lower Area One and constructing the retention/detention ponds in Missoula Gulch in the mid-1990s, there has been significant improvement in storm water quality at Missoula Gulch, but not a similar level of improvement in storm water quality at the major municipal storm water system outfalls at Buffalo Gulch and MSD. EPA's 2008 Surface Water Characterization Report recommended that: "Detention/retention basins need to be installed at the base of Buffalo Gulch and the MSD subdrainages as soon as possible to reduce the suspended contaminant load."

2. What is your assessment of the current performance of the remedy in place at the Site?

   The actions taken have improved water quality in Silver Bow Creek. However, State water quality standards have not yet been met and thus additional technically practicable actions are necessary. Ground and surface water improvements will rely on effective management of stormwater, sediments, and remaining wastes, as well as continued evaluation of those remedy components through effective monitoring.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

   Yes, the citizenry has articulated concerns regarding stormwater management to EPA Region 8 and the State of Montana. The opinions expressed are focused on water quality, the need for additional action, and the long term stewardship of waste left in place following completion of remedial action.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.

   The State, through the Natural Resource Damage Program, along with the BNRC, has produced a number of ground water studies that examine ground water contamination in the MSD-Parrot Tailings-Northside Tailings-Diggings East corridor.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?

   Not in the last five years.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

   For the most part – yes. A concern is the lack of comprehensive evaluation of domestic use of ground water – including drinking water and irrigation - within the established controlled ground water area (BABCGWA). The current evaluation is limited to the ground water TI zone. The Agencies will need to revisit this issue.

7. Are you aware of any changes in projected land use(s) at the Site?

   Yes, development in Butte continues to change the urban landscape. As such, future construction and infrastructure projects may potentially intersect areas not investigated. Thus, a portion of the institutional control program will have to provide for effective management of contaminated substances containing principal threat materials leading to future remedial actions.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

   The implemented remedy has resulted in improvements in water quality, as well as provided protections of human health and the environment through the Residential Metals Abatement Program. The State looks forward to working with EPA to refine the implementation of remedy components, including those discussed above. The State believes that continued evaluation of surface and groundwater remedy components, as well as evaluation of un-reclaimed and previously reclaimed surface source areas is necessary to ensure protectiveness of human health and the environment and compliance with ARARs.

The following comments were submitted January 5, 2015 via email by Resident #6.

Stormwater Runoff

The area of uptown Butte Montana was the scene of extensive mining activity in the past. This area has been designated under Superfund as the Butte Priority Soils OU. One of the identified problem areas was Storm Water Runoff into Silver Bow Creek. During Butte's frequent storm water runoff events, arsenic, lead, mercury, copper and zinc are washed away, ultimately arriving untreated into Silver Bow Creek.

The Superfund remedy for Butte Priority Soils, as well as other subsequent decisions, has mandated the use of storm water runoff controls as part of the remedy. EPA in Montana left the enforcement of these controls primarily up to the local Butte/Silver Bow government which is also a PRP.

The problem is that the local government is not enforcing these controls to any appreciable extent. Is this lax enforcement all due to there not being a consent decree in place? Are we powerless to control storm water runoff until there is a consent decree? What if there is no consent decree in the near future? Storm water runoff is still polluting Silver Bow Creek and the local government seems unable or unwilling to enforce the controls. I suspect the latter reason because they do not want to "offend" local contractors, homeowners, property owners, etc. Of course, I may be wrong. If there is some compelling reason for the lax enforcement, I would like to know what it is and how it can be remedied.

During the summer of 2014, Sara Sparks and Nikia Greene of the EPA kindly gave me a "tour" of just a few of the problem areas related to storm water runoff. The tour was very informative. I was shocked. Streaks of contaminated runoff could be seen flowing into drains directly, untreated, into Silver Bow Creek. Surprisingly, many of the properties that I saw were owned or controlled by Butte/Silver Bow local government. It was obvious that the storm water controls were not being enforced by local government. A couple of weeks ago I did my own survey and found numerous sites both privately owned and owned/controlled by local government where storm water runoff was unabated and uncontrolled.

My understanding is that although EPA can delegate to local government the task of enforcing the controls, ultimate authority and responsibility for the quality of the cleanup remains with EPA. I have contacted EPA officials in the past and not received an answer as to why these clearly mandated controls are not being enforced or implemented other than a reference to the consent decree. I thought that abundant control regulations/rules were already in place which, if they were enforced, would help to solve the problem. What is stopping EPA from enforcing these controls? Why isn't Butte local government compelled to do the job they are supposed to do? This has been going on for some time. When will it stop? Again, I will reiterate, if there is a good reason why Butte Silver Bow is unable to enforce storm water runoff controls, please let me know.

The Superfund remedy is being compromised by this lack of storm water runoff controls enforcement by local government. The regulations are in place but are not being applied to the

problem. Again, I ask why? I read recently that EPA is vigorously enforcing storm water controls in Hawaii with hefty fines. Why hasn't enforcement been as forceful in Butte?

For the waste in place remedy in Butte to work, the waste must stay in place. It cannot be allowed to flow off the Butte Hill into Silver Bow Creek.

Certainly, educational/outreach activities can help. But they are no substitute for enforcement of existing decisions. Voluntary compliance is spotty and uneven. Enforcement places all on a level playing field of compliance.

The current Five-Year Review must consider the issue of stormwater runoff.
During acute stormwater runoff events water quality standards are violated for Silver Bow Creek. The Five Year Review must address this problem.

In summary regarding stormwater runoff, the following would probably be agreed to by all:

1. Storm water runoff from the Butte Hill is a serious issue and, if not properly controlled, storm water runoff presents a significant threat to the Superfund cleanup remedy for Butte Priority Soils.

2. Much of the enforcement of storm water runoff prevention and control has been delegated by EPA to Butte/Silver Bow local government.

I have serious concerns about this delegation of responsibility for the enforcement of storm water controls to Butte/Silver Bow local government:

A. Butte/Silver Bow local government enforcement has been lax and virtually non-existent.

B. Many sites that contribute to the storm water runoff problem are actually maintained and/or owned by Butte/Silver Bow local government.

How can the public have any confidence that storm water runoff controls will be enforced by local government in the future? If these controls are not enforced, the BPSOU remedy will be compromised. If Butte local government cannot control the storm water runoff from their own property, what confidence can the public have that local government is up to the task of enforcing storm water controls?

While EPA can delegate this enforcement of storm water runoff controls to local government as an administrative convenience, **ultimate responsibility for the implementation of storm water runoff controls as part of the Superfund remedy remains with the EPA, not local government.**

What assurances does the public have that things will be done differently with regard to storm water enforcement by local government? What confidence can the public have that Butte local government is up to the enforcement task when it has failed in this task in the past?

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Perhaps to put this a different way: What has been the reason for lax enforcement of storm water runoff control regulations by local government in the past? What will change to over come these barriers? What is preventing local government from strictly enforcing storm water runoff controls?
Is it a lack of money? Is it a lack of personnel? Or, is it a lack of will?

Whatever the cause, it is EPA's duty to make sure that storm water controls are strictly enforced. The integrity of the Superfund cleanup demands strict enforcement. ***What will EPA do to assure the public that these storm water runoff controls will be strictly enforced by local government?***

My concerns have not been addressed by the Montana Office of EPA.
I received a cursory response from the EPA's Sara Sparks to the effect that EPA was limited because of on-going consent decree negotiations, that there had been problems and that sometime in the future the issue of lax storm water enforcement would be addressed. The exact response was: *We continue to work with all parties to address storm water issues. I agree that there has been some problems and we will meet weekly to address the issues.*

This is a non response response that perfunctorily condescendingly dismisses my detailed complaint. It reminds me of a perfunctory State Department communique after a meeting.

This response contains no answers to my direct question:

1. Why has enforcement of storm water controls been missing? EPA was aware of the problem. I was even taken on a storm water runoff "tour" by EPA folks who pointed the problem out to me. My question remains: Why has nothing been done?
2. Why hasn't EPA followed and corrected where necessary the poor performance of its PRP agent Butte/Silver Bow local government? It seems the problem was turned over to local government and then dropped.
3. How do consent decree negotiations limit EPA's ability to enforce previously promulgated and adopted storm water runoff controls that have nothing to do with the consent decree?
4. What assurances does the public have that these meetings will produce results? EPA Montana people have been meeting with Butte/Silver Bow officials in the past and nothing has been done to enforce, in a meaningful manner, storm water runoff controls. What will be different this time?
5. Will these monthly meetings be open to the public? Will reports be provided of progress to the public? How will the public be involved. Dismissive answers to serious questions as I received do not warrant public confidence in the process or in the result.

I would urge the following:
That as quickly as possible a detailed plan be developed for addressing and controlling storm water runoff issues. This plan will mandate specific, concrete and measurable actions and results with timetables attached for compliance by local government. This process will be monitored. Reports will be given to the public.

Not only am I shocked that EPA has allowed this problem to get to where it is. I am shocked at

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

the EPA's lack of concern and lack of any sense of urgency. My hope in contacting Region 8 and national headquarters was that something would be done to fix the problem. What I have gotten is the problem kicked back to where it originated--with the Montana Office of EPA.

No wonder citizens feel that the EPA is not accountable to citizens and is impervious to citizen input.

The storm water runoff matter is not addressed. Storm water runoff continues to be a major problem compromising the Superfund cleanup in Butte and nothing on the horizon indicates that EPA is taking this lax enforcement seriously.

While having construction projects to address the issue is important, these projects are no substitute for enforcing the storm water runoff controls currently in place.

I see that the EPA will continue to rely on voluntary compliance and "education" to achieve storm water runoff control.

Nationally, as the EPA's Office of the Inspector General has determined, voluntary controls that rely on "education" do not work to significantly solve environmental remediation problems. The voluntary approach has not worked in the past in Butte and there is no reason to conclude that it will work in the future.

Poor regulatory oversight leads to poor compliance. National evidence shows that voluntary compliance does not work to achieve cleanup goals. Without enforcement, the storm water controls in place in Butte are meaningless.

It is a simple cost/benefit analysis. For example, contractors can ignore the regulations and it costs them nothing other than perhaps a lecture on voluntary compliance. Why comply? Complying costs money. Non-compliance costs nothing.Why act contrary to self-interest when there is no penalty attached for non-compliance?

I am still shocked at EPA's lack of will to enforce existing storm water runoff controls in Butte.

I would offer the following as my general suggestions as to how to remedy the storm water runoff control problem in Butte.

Uncontrolled, storm water runoff is a major threat to the quality of the Silver Bow Remediation under Superfund.

1. EPA and Butte/Silver Bow admit that the enforcement of storm water control requirements has not been effective.

2. EPA declares its clear intention to enforce storm water runoff control requirements in the future. If Butte/Silver Bow is to remain as the primary "enforcer" of storm water runoff controls, there needs to be close supervision of Butte/Silver Bow's enforcement efforts.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

When this enforcement is lax or non-existent, as has been the case in the past, local government is held accountable and required to enforce the controls.

3. The Five Year Review should address the following specifics:

a. Conduct an inventory of present problematic storm water runoff sites in Butte. This does not have to be an exhaustive inventory such as, for example, an historic properties condition inventory. It can consist of driving around and noticing problematic sites. Presently EPA and MDEQ officials in Butte have a pretty good idea of where the problems lie. The problem is these sites have been largely ignored.

b. Once these problematic sites are identified, BSB is notified and told to fix them or see that they are fixed. If, for example, the problem is due to a contractor not following best management practices, BSB will contact that person, indicate the nature and extent of the problem and set up a deadline and protocol for addressing the problem. BSB will monitor compliance. If compliance is lacking, enforcement will occur. Of course, given BSB's poor record in the past, EPA will have to monitor BSB, closely and vigorously.

c. At the planned weekly meetings, BSB will report on progress and indicate what are the next steps in their enforcement.

d. Of course, voluntary compliance is best. However, if the offending party, contractor, home/property owner, etc. has not complied on a voluntary basis with the storm water runoff control requirements, sanctions will be employed.

e. The EPA needs to make sure that BSB has its own house in order. By that I mean that many of the problematic storm water runoff control sites are OWNED by Butte/Silver Bow. This cannot be tolerated in the future. Particular attention at the weekly meetings needs to focus on what BSB has done or plans to do to clean up its own mess.

f. A compliance officer needs to be designated by EPA. That would be someone who has responsibility for making sure that storm water controls are being implemented.

g. The public needs to be enrolled to help. By that I mean the public should be encouraged to report storm water runoff control problems to the appropriate EPA official. The local government's point person on storm water runoff controls should also be identified and made known to the public.He/she should inform EPA of reports of violations or problems.

h. Public outreach should be part of the solution. Home and property owners as well as contractors should be educated about the problem of storm water runoff and ways that they, as individuals can help fix the problem. Groups such as CTEC, CFWEP and CPR and the landlords association, to name a few, should be involved.

i. The process of storm water runoff controls enforcement needs to be transparent. The public needs to be informed about what is being done to fix the problem. BSB needs to issue publicly available progress reports.

j. To enhance public involvement, an ad hoc storm water runoff citizens group should be created to hold EPA, MDEQ and BSB accountable.

k. If BSB needs additional resources, they will be provided.

l. If MDEQ is truly EPA's partner in the Superfund cleanup, MDEQ needs to be more proactive and less passive.

The above are just a few suggestions. As long as EPA relies on BSB to enforce storm water controls, EPA needs to monitor what local government is doing. The lax approach of the past on EPA's part has not worked. If local government fails to enforce the necessary storm water

controls, EPA needs to hold local government accountable. There needs to be a change. EPA needs to back up its verbal support of an effective cleanup with deeds to enforce storm water controls. Voluntary action will only get us so far. Enforcement is also necessary. BSB is not going to fix the problem on its own initiative. EPA needs to step into the situation. We have a waste in place remedy for Butte. This remedy will "work" only if the waste actually stays in place, not if it is washed into Silver Bow Creek.

Concluding Statement Regarding My Position/Concerns on Stormwater Runoff

When it rains or the snow melts in Butte, stormwater runoff occurs. As this water flows over Butte's landscape, large amounts of toxics from past mining as well as other pollutants from land, streets, driveways and sidewalks flow into Butte's drain system and go untreated into Silver Bow Creek. Stormwater runoff is the main source of ongoing pollution of Silver Bow Creek. Unmitigated stormwater runoff is a significant threat to the Superfund cleanup of Silver Bow Creek.

Recently, the EPA has announced several major projects to control stormwater runoff. These projects hide the EPA's utter failure to address Butte's stormwater runoff in the past and will do little to solve the problem. The problem of stormwater runoff in Butte exists because the EPA has failed to enforce clearly mandated stormwater control regulations. This problem has gone on unaddressed for years and a couple of showpiece projects are not enough.

You don't have to look at persistent problems meeting water quality standards, seeing the extent of the problem is easy. All one has to do is drive around uptown Butte after a rain storm and you can see the yellow, contaminated soil and other debris flowing into Butte's storm drains, flowing untreated into Silver Bow Creek.

EPA has delegated to Butte's local government the task of implementing and enforcing these stormwater control regulations. Many of the most problematic stormwater properties are actually owned and controlled by Butte's local government. Why can't local government tend to its own property? The local government has not been up to the task of implementing stormwater controls, EPA knows that local government is not enforcing the regulations and EPA does nothing about it. Is this lax enforcement by local government because of a lack of money or a lack of personnel or a lack of will? The reason for lax enforcement doesn't matter. What matters is that the EPA has become ossified in its cleanup efforts and has failed to enforce the stormwater control mandates in place.

Although the EPA can delegate to local government the task of enforcing the controls, ultimate authority and responsibility for the quality of the cleanup remains with EPA. The EPA admits there are problems but fails to articulate a solution. What is stopping EPA from enforcing these stromwater runoff controls? Why isn't Butte's local government being held accountable for not enforcing the stormwater runoff controls?
While having construction projects to address the issue is important, these projects are no substitute for enforcing the storm water runoff controls currently in place.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

The EPA has said it will continue to rely on voluntary compliance and "education" to achieve storm water runoff control.

Nationally, as the EPA's Office of the Inspector General has determined, voluntary controls that rely on "education" do not work to significantly solve environmental problems. The voluntary approach has not worked in the past in Butte and there is no reason to conclude that it will work in the future.

Poor regulatory oversight leads to poor compliance. Without enforcement, the storm water controls in place in Butte are meaningless.

It is a simple cost/benefit analysis. For example, a contractor can ignore the regulations and it costs them nothing other than perhaps a lecture on voluntary compliance. Why comply? Complying costs money. Non-compliance costs nothing. Why act contrary to self-interest when there is no penalty attached for non-compliance?

The situation seems simple to me:
1. Storm water runoff from Butte Hill in Butte, Montana goes through drains and ends up, untreated, in Silver Bow Creek.

2. This storm water runoff is contaminated with heavy metals as well as other toxics.

3. EPA regulations are in place in Butte to control storm water runoff.

4. EPA has designated the Butte/Silver Bow local government as EPA's agent to enforce storm water runoff control regulations.

5. By the EPA's own admission, Butte/Silver Bow has not been enforcing the storm water runoff controls.

6. As a result, the Superfund remedy for Butte, Montana is being adversely impacted.

All I am asking is that EPA enforce or see to it that Butte/Silver Bow enforces the storm water runoff controls that are in place. I am not asking anything new. All I ask is: Enforce what you said you would enforce.

While voluntary compliance is laudatory, voluntary compliance has not worked and does not work in Butte. Consider that many of the problematic properties are owned or controlled by Butte/Silver Bow local government, the very agent that EPA Montana has designated to enforce storm water runoff controls. **If the EPA's agent Butte local government can't comply, why expect that citizens or businesses will comply.**

Unenforced regulations and requirements are meaningless.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

I don't really see why this should be a controversial issue. EPA should enforce its own regulations.

I look forward to hearing from the Montana Office under the auspices of this Five Year Review that they will enforce storm water runoff control regulations. I hope that I do not get some all purpose answer that we are looking into the problem and will address it in the future. Citizens deserve an agency that is more responsive to citizen input than that.

I included in regard to the current Five Year Review the following response to the Montana Office of EPA's stated position:
Thank you for your letter of September 23, 2014 which responds to a couple of the points I raised in earlier complaints and a couple of the questions that I asked earlier. I am still waiting for responses to the bulk of my concerns from EPA national headquarters, Region 8, Montana Office of EPA, MDEQ and Butte/Silver Bow. I am tired of perfunctory letters that simply seek to placate the public with platitudes about being patient and about not worrying, all is fine. Citizens deserve better from government officials.

While the agencies might find public input, particularly when it is in the form of complaints irksome, the agencies still have a duty to respond to public inquiry. So far your brief letter of 9/23/2014 and a brief email from Sara Sparks attesting to problems regarding to the implementation of storm water runoff controls as mandated under the BPSOU Remedy as well as Unilateral Administrative Order are the **only** answers I have received to numerous, well documented, emails.

MDEQ and Butte/Silver Bow have been MUTE!!!!! I intend to pursue this lack of responsiveness from BSB officials separately. There is no excuse for them ignoring citizen questions.MDEQ is usually responsive to public concerns but not on this issue. MDEQ is EPA's "partner." Is MDEQ EPA's "silent partner?"

Let me now consider the specifics of your September 23, 2014 letter:

There is incontrovertible evidence that, particularly during acute storm water runoff events in Butte, water quality standards are exceeded for Silver Bow Creek. The last Five-Year Review says so. Interim studies say so. MDEQ reports say so. Statements from EPA officials say so. Obviously, there is spotty, at best, enforcement. All one has to do is drive around uptown Butte and you will see a plethora of problematic properties, many of which are owned or controlled by Butte/Silver Bow, after a storm water event.

To say that water quality is improving is good but insufficient. Water quality standards are not being met after acute events. Your argument is like saying that because murder rates have improved, we should be satisfied. When will the problem be fixed? When will it be the case that acute storm water runoff will not cause water quality standards to be violated? What is being done to fix the problem? Your letter is very short on specifics. So far what you are doing has had problems, as Sara Sparks said. What will be done differently in the future?

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Your letter refers to regulations and requirements regarding storm water runoff controls being in place. Simply having them in place is meaningless unless they are enforced. It is not the requirements that are problematic. It is your refusal to enforce these rules and regulations that is problematic. You mention penalties available for non-compliance. Have any penalties ever been applied or assessed against any party? If so, against whom and when? For how much?

You mention weekly meetings at which storm water runoff problems are discussed. Are these meetings open to the public or the press? If not, why not? We are talking about meetings that MDEQ and BSB attend. MDEQ and BSB are subjected to Montana's open meeting laws. Are minutes taken at these meetings? If so, are they available to the public and press? If not, why not?

You allude to specific EPA oversight. What specific oversight by EPA has taken place? Can you provide any specific examples of EPA oversight that resulted in a problem being fixed?

These are still outstanding issues to which perfunctory answers are insufficient. The public deserves more than being put off with pious pronouncements of progress.

Earlier I submitted a specific plan for addressing the problem of storm water runoff in an efficacious manner. **I have heard nothing back about it. So I submit it again to you.**

I would offer the following as my general suggestions as to how to remedy the storm water runoff control problem in Butte.

Uncontrolled, storm water runoff is a major threat to the quality of the Silver Bow Remediation under Superfund.

1. EPA and Butte/Silver Bow admit that the enforcement of storm water control requirements has not been effective.

2. EPA declares its clear intention to enforce storm water runoff control requirements in the future. If Butte/Silver Bow is to remain as the primary "enforcer" of storm water runoff controls, there needs to be close supervision of Butte/Silver Bow's enforcement efforts.
When this enforcement is lax or non-existent, as has been the case in the past, local government is held accountable and required to enforce the controls.

3. Specifics:
a. Conduct an inventory of present problematic storm water runoff sites in Butte. This does not have to be an exhaustive inventory such as, for example, an historic properties condition inventory. It can consist of driving around and noticing problematic sites. Presently EPA and MDEQ officials in Butte have a pretty good idea of where the problems lie. The problem is these sites have been largely ignored.
b. Once these problematic sites are identified, BSB is notified and told to fix them or see that they are fixed. If, for example, the problem is due to a contractor not following best management practices, BSB will contact that person, indicate the nature and extent of the problem and set up a deadline and protocol for addressing the problem. BSB will monitor

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

compliance. If compliance is lacking, enforcement will occur. Of course, given BSB's poor record in the past, EPA will have to monitor BSB, closely and vigorously.

c. At the planned weekly meetings, BSB will report on progress and indicate what are the next steps in their enforcement.

d. Of course, voluntary compliance is best. However, if the offending party, contractor, home/property owner, etc. has not complied on a voluntary basis with the storm water runoff control requirements, sanctions will be employed.

e. The EPA needs to make sure that BSB has its own house in order. By that I mean that many of the problematic storm water runoff control sites are OWNED by Butte/Silver Bow. This cannot be tolerated in the future. Particular attention at the weekly meetings needs to focus on what BSB has done or plans to do to clean up its own mess.

f. A compliance officer needs to be designated by EPA. That would be someone who has responsibility for making sure that storm water controls are being implemented.

g. The public needs to be enrolled to help. By that I mean the public should be encouraged to report storm water runoff control problems to the appropriate EPA official. The local government's point person on storm water runoff controls should also be identified and made known to the public.He/she should inform EPA of reports of violations or problems.

h. Public outreach should be part of the solution. Home and property owners as well as contractors should be educated about the problem of storm water runoff and ways that they, as individuals can help fix the problem. Groups such as CTEC, CFWEP and CPR and the landlords association, to name a few, should be involved.

i. The process of storm water runoff controls enforcement needs to be transparent. The public needs to be informed about what is being done to fix the problem. BSB needs to issue publicly available progress reports.

j. To enhance public involvement, an ad hoc storm water runoff citizens group should be created to hold EPA, MDEQ and BSB accountable.

k. If BSB needs additional resources, they will be provided.

l. If MDEQ is truly EPA's partner in the Superfund cleanup, MDEQ needs to be more proactive and less passive.

The above are just a few suggestions. As long as EPA relies on BSB to enforce storm water controls, EPA needs to monitor what local government is doing. The lax approach of the past on EPA's part has not worked. If local government fails to enforce the necessary storm water controls, EPA needs to hold local government accountable. There needs to be a change. EPA needs to back up its verbal support of an effective cleanup with deeds to enforce storm water controls. Voluntary action will only get us so far. Enforcement is also necessary. BSB is not going to fix the problem on its own initiative. EPA needs to step into the situation. We have a waste in place remedy for Butte. This remedy will "work" only if the waste actually stays in place, not if it is washed into Silver Bow Creek.

Berkeley Pit

Problems to be Considered during the Five Year Review

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Failure to respond in a meaningful way to public input.
Failure to thoroughly test cleanup technologies for the Pit.
Failure to consider and address the problem of scaling due to the release of lime treated water into Silver Bow Creek. Vast amounts of lime are being used and will be used to treat the Pit's water for eventual discharge into Silver Bow Creek. This discharged water will be high in lime which can cause carbonate scaling in Silver Bow Creek. As an analogy, think of the white scum that forms on the bottom of a teapot. Do we want a large section of Silver Bow creek coated with a white scum deposit? Scaling can wreck the cleanup of Silver Bow Creek. EPA says if this is a problem we will deal with it in the future. EPA has called the expression of concerns about scaling alarmist. But after scaling occurs it will be too late.
Failure to provide for a margin of error.
Failure to look at fresh cleanup technologies.
Failure to crucially re-evaluate past decisions.
Failure to consider that their estimates/models of what will happen in the pit may be wrong.
Failure to address the issue of Pit wall instability as a danger to the remedy. there have been significant landslides in the Pit that have caused the water level to rise. We live on top of an active earthquake area. With such a small margin of error for the Pit's water, should Butte residents feel secure? Should people living below the Pit feel safe? What if a landslide compromises much of the buffer?
The remedy calls for only a meager sixty foot (1%) margin of error. This is not much when you look at the depth of the water in the Pit. This is not much if you consider the devastation that will occur if the EPA gets it wrong. Why don't we start pumping now? Is it because EPA wants to save British Petroleum money? Far too many of the remedies in the Butte area are driven by cost, not protecting the public's health and the environment.
The EPA, in saying that the Pit Plan is a good plan, relies on models and estimates. Do we want Butte's future to depend on models and estimates that can be wrong? The EPA's models have been wrong in the past. For example, the model that EPA used in assessing the environmental impact of the Parrott Tailings on Butte water has been totally discredited

Parrott Tailings

The EPA based its cleanup decision for the Parrott Tailings on a ***model*** which has been thoroughly and completely invalidated. Even so, in an exercise of wanton hubris, the EPA clings to that invalid/discredited model, even in the face of overwhelming evidence from several sources that the Parrott Tailings are a clear and present danger to Butte's already challenged groundwater. The migration of Parrott Tailings water is not conforming to the EPA model. The Parrott Tailing's cleanup decision belies EPA's claim that it bases its decisions on "good science." It seems EPA is more prone to basing decisions on poor guesses. Scarce state restoration dollars will have to be spent to fix the problem.

The focus of the remainder of this paper is on the Five Year Review as it applies to Butte Priority Soils OU.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Given that the EPA's remedy for Priority Soils calls for a "cleanup" that relies heavily on leaving capped waste-in-place and institutional controls, rather than aggressive treatment and/or removal of wastes, the Five Year Review is particularly important. A poorly functioning or implemented remedy will expose citizens to the very threats from toxics of concern that Superfund was supposed to remediate. The threat remains at Priority Soils, but it is EPA's contention that that threat can be managed so as not to affect human health and the environment. Unless the waste-in-place is "managed" properly, the remedy will not protect human health and the environment.

The protectiveness of the Remedy as currently being implemented also depends on the adequacy of the data upon which the health risk assessments were based and the adequacy of the data upon which the action levels were based. As will be shown, **new studies and new data** since the Record of Decision was released show that the original data used for the health risk assessments and the determination of the action levels was inaccurate, inadequate, incomplete and mischaracterized the health threats and risks at the Priority Soils site. **New studies and new data** call into question the protectiveness of the Remedy currently being implemented at the Priority Soils OU. Assumptions were made without justification. If the data is problematic, all conclusions based on that data are suspect and warrant change and redoing.

Given the high concentration of low-income citizens within the BPSOU, particular attention must also be given to issues related to environmental justice.

The question to be answered by the Five Year Review is: Whether or not the Butte Priority Soils Remedy as currently being implemented is protective of human health and the environment. The question to be answered by this Five Year Review is whether or not environmental justice is being promoted by the implementation of the Priority Soils Record of Decision. **The answer in both cases is a resounding NO!!!!!!!**

As this paper will convincingly demonstrate, the Priority Soils ROD will have be modified in order to successfully address the concerns that I discuss.

Five-Year Reviews—What they are supposed to do.

Despite past EPA practice in Montana, Five-Year Reviews are not supposed to be perfunctory exercises. Let us consider the main guidances found in the EPA's *Comprehensive Five-Year Review Guidance*—EPA 540-R-01-007—OSWER No. 9355.7-03B-P, June 2001. (This is **THE** Guidance document covering Five-Year Reviews. Unless otherwise noted, all page references refer to this document.)

Five-Year Reviews need to be conducted when waste is left in place
The purpose of a Five-Year Review is: "to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. Evaluation of the remedy and the determination of protectiveness should be based

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

on and sufficiently supported by data and observations." (Page1-1) See also: *CERCLA*, Section 121 (c) and 40 *CFR*, Section 300.430(f)(4)(ii).
Community Involvement is a significant part of the Five-Year Review process. (See pages 3-2 and 3-3.)
The Five Year Review envisions the necessity of supplemental data collection, sampling and evaluation activities. (Page 3-3)
Neutral, objective parties "without bias or preconceived views or conclusions about the remedy and the site" should perform the Five-Year Review. (Page 3-5)
The Five-Year Review should address certain topics which include:
"Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?" (Page 3-7)
"Has any other information come to light that could call into question the protectiveness of the remedy?" (Page 3-7)
"A determination of whether (new) issues affect current or future protectiveness." (Page 3-7)
"List of any recommendations, including follow-up actions to ensure protectiveness." (Page 3-7)
The Five-Year Review process is supposed to identify whether or not "there are problems with the remedy that could ultimately lead to the remedy not being protective or suggest protectiveness is at risk." (Page 4-1)
The Five-Year Review should consider whether "other actions (e.g. removals) are necessary to ensure that there are no exposure pathways that could result in unacceptable risks." (Page 4-1)
The Five-Year Review should consider: "whether new human health or ecological exposure pathways or receptors have been identified." (Page 4-2)
Very importantly, the Five-Year Review should consider whether "new contaminants or contaminants sources have been identified." (Page 4-2)
The implementation status of institutional controls needs to be considered. (Page 4-3) This includes whether or not institutional controls are incomplete, inadequate or unworkable. (Page 4-10)
If necessary, new risk assessments should be conducted. "In some cases, it may be necessary to revise or expand the previous risk assessment as part of your five-year review." (Page 4-7)
The Priority Soils remedy uses site-specific cleanup levels. "If the remedy is intended to meet site specific. . . cleanup levels, you should check to see whether toxicity or other contaminant characteristics used to determine the original cleanup level have changed. If there have been changes in the understanding or in our knowledge of these physical/chemical characteristics, you may need to recalculate risk. . . ." (Page 4-7) It is clear that cleanup is not a frozen process but changes to meet new conditions. (Page 4-80)
RAOs (Remedial Action Objectives) may be modified as a result of the Five-Year Review process. (Page 4-8)
RAOs need to be evaluated as to whether or not they are "sufficiently comprehensive to cover new or changed conditions at a site." (Page 4-9)
Five-Year Reviews need to consider whether or not risks have been sufficiently addressed at the site. (Page 4-9)
If needed, the agency should be open to conducting "additional studies or investigations" in order to optimize the remedy. (Page 4-12)
Remedies need to be modified if they are not protective, based on incomplete or inadequate data and/or unworkable. (Pages 4-13 and 4-14)

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Another document of significance is:
EPA, *Five Year Reviews, Frequently Asked Question (FAOs) and Answers*, OSWER 9355.7-21.

In this document we find additional information as to what is involved in a Five-Year Review and that Five-Year Reviews are supposed to be a proactive processes.

Remedy optimization opportunities typically identify modifications to the operating remedy which may improve remedy performance. . . . (Page 8)
*In Question B of the Technical Assessment section of the five-*year *review report, the toxicity data evaluation done in the risk assessment should be reviewed to ensure that any assumptions made at the time of the original risk assessment continue to be protective. In addition to reviewing the toxicity information form the original risk assessment, Regions generally should evaluate new toxicity information for other chemicals identified at the site. New toxicity information my result in the determination that the additional contaminants sources poses a risk to human health or the environment. The review of both the original risk assessment and any new site contaminant information is intended to ensure that the implemented remedy continues to be protective both currently and in the future. (Page 9)*
When conducting the five-year review, it is appropriate to evaluate whether any new information comes to light that could call into question the protectiveness of the remedy. (Page 10)
The goal of the recommendation, and associated follow-up actions, generally is to ensure both current protectiveness and long-term protectiveness of the implemented remedy. (Page 11)

The overall question the Five Year Review is supposed to answer is: Does the remedy protect human health and the environment?

If the Montana Office is going to be true to their own agency requirements in conducting a Five-Year Review, it is clear that that review will need to be more than a perfunctory process. If the Remedy for Priority Soils is not meeting the above requirements, if new information has come to light, if the remedy is based on incomplete, inaccurate or inadequate characterization of the toxics of concern, if the remedy is not protective of human health and the environment, it should be modified so as to be fully protective of human health and the environment. Remedy evaluations are supposed to fix Remedy implementation problems that compromise the remedy now and in the future. As I will show, there is strong warrant for significant modifications of the Priority Soils Record of Decision.

Also, by extrapolation, environmental justice issues must permeate the Five-Year Review process given that the Office of Solid Waste and Emergency Response [OSWER] in their *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* mandates that "Environmental Justice issues should be considered at all stages of policy guidance and regulation development, beginning with preliminary efforts" and that environmental justice should be integrated into all agency actions. (OSWER Directive 9200.3-18FS, EPA540/F-95/023) EPA Administrators have consistently defined environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, ***implementation, and enforcement*** of environmental laws, regulations, and policies."

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

The following are issues/topics of concern regarding the BPSOU Remedy as currently being implemented.

Significant Toxics of Concern, which EPA admits are present at the BPSOU site, have not been adequately characterized or evaluated. Due to this inadequacy, the Remedy as currently being implemented can provide no assurances that the public health or the environment will be protected.

Metals/elements of health and environmental risk such as aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium, while present, according to the EPA, at the BPSOU site, are not considered under the Remedy, nor have these contaminants of concern ever been assessed by EPA as to the threat to human health that they pose. Yet, these metals **do pose**, according to the EPA, a risk to human health and the environment that mandates that they be assessed and remediated. EPA admits there is a threat in place but does not remediate that threat to human health and the environment under the Remedy as currently being implemented. In short the Remedy as currently being implemented is based on an incomplete, inadequate assessment and consideration of all the potential metals/elements/contaminants of health and environmental risk. In terms of the BPSOU, no comprehensive health risk assessments have been conducted pertaining to the metals/elements of health and environmental risk that are identified in the above part of this section—aluminum, mercury, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium. Exposure data pertaining to the metals/elements of health and environmental risk (aluminum, mercury, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium) is insufficient. Pathways of exposure regarding these above-mentioned metals/elements of health and environmental risk have not been identified. Given that the adequacy of this Remedy as currently being implemented must be judged in terms of whether or not it will help achieve the goals of Superfund, which are to protect human health and the environment, a reasonable person could conclude that that this Remedy as currently being implemented is based on, at best, incomplete/inadequate data and ignores significant areas of threat to human health and the environment. Therefore, this Remedy as currently being implemented is inadequate in protecting human health and the environment from known contaminants of concern.

The Remedy as currently being implemented rests on the unproven assumption that if you remediate lead and arsenic you will automatically remediate the above listed contaminant/metals/elements of health and environmental risk. For example, can we assume that if lead levels drop, exposure to other heavy metals will also drop in a similar way? Does remediating mercury assure that cadmium levels will also drop? The EPA provides no information warranting such a conclusion. While the EPA says that its decisions are based in "good science," how good is their science when it is based on missing, incomplete and inadequate data? If the data is faulty, what flows from that data is also faulty. *The relationship between lead and other metals concentrations in outdoor soil is not evaluated in any detail.* (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 15, 2009)

The Remedy as currently being implemented fails to consider the synergistic affects of the contaminants/metals/elements of health and environmental risk on human health. It is known that synergistic interaction does occur but this synergistic interaction was never evaluated.

The Remedy as currently being implemented fails to deal with bioaccumulation of the metals/elements of risk and toxics of concern.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

The Remedy as currently being implemented fails to deal with the cumulative effects of exposure to these contaminants/toxics of concern.

The Remedy as currently being implemented fails to consider the chronic effects of exposure to arsenic, mercury and all of the other toxics of concern. Consider:

Blood and urine samples indicate acute arsenic exposure while tests of hair and fingernails indicate chronic arsenic exposure.

Epidemiological assessments have identified high cancer prevalence in the Butte area for arsenic related types of cancer, implicating exposure to arsenic and other constituents in mine waste as a cause.

Prior bioavailability work, which strongly influenced cleanup levels, failed to consider relative bioavailability for the diverse types of sources such s attic dust, house dust, or sufficient numbers and varieties of soil types in the Butte area. Relying upon soil cleanup level for lead and arsenic and lead biomonitoring only will not ensure protection from excessive exposure to arsenic and other metals.

Prior bioavialability work also does not consider the effect of exposure to multiple chemicals, as is the case in Butte. (Steve Ackerlund, CTEC Position on Butte Area Soils Cleanup Program, Draft, June 25, 2009)

The site-specific bioavailability data that the Remedy as currently being implemented was extrapolated from the Anaconda Smelter Superfund site. No justification for doing this has ever been provided. Specific bio-availability of indoor dust and attic dust have never been adequately addressed. (See: Summary of Risk Assessment Reviews—Steve Ackerlund—Draft—June 3, 2009) *In particular, the applicability of these 'site-specific' values to indoor dust and attic dust has not been evaluated*. (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 15, 2009) For example, the characteristics of attic dust may well mean that it is very bioavailable. Yet, the EPA failed to evaluate this. *Regarding bioavailability, the generalized estimates made for the entire BPSOU may not apply to specific locations, and the potential for error is larger when the 'site-specific' bioavailablity factor used is very much to the low end of typically values. In particular, the applicability of these 'site-specific' values to indoor dust and attic dust have not been evaluated*. (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 24, 2009)

The EPA provides no justification for assuming that using lead level data can accurately lead to protective arsenic and mercury exposure action levels.

There are elevated cancer rates in Butte of the type of cancers related to exposure to mine waste. Such a finding is ignored by the EPA. If the current Remedy was working, these cancers would be decreasing.

By only considering only arsenic, lead and cadmium, the Priority Soils remedy as currently being implemented fails to sufficiently protect public health because it neglects other metals/contaminants of concern.

The Remedy as currently being implemented fails to consider the fact that children are particularly at risk from all the pollutants found in Butte Priority Soils, not just lead, mercury and arsenic. Action levels that may be protective for adults are not necessarily protective of children. Of course, the EPA has conducted no investigations of the effects of aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium on children within the BPSOU. Are BPSOU children somehow mysteriously immune to the health effects of aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium?

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

The tests used to detect arsenic contamination rely on urine studies that do not show the long-term, chronic affects of exposure to arsenic. Hair and fingernail studies give a much more comprehensive view of long term, chronic exposure to arsenic. Relying on urine sample fails to give a comprehensive picture of the degree of long-term exposure to arsenic that residents of the BPSOU have had to endure. Studies of the chronic effects of exposure to arsenic tend to show a much more significant problem. (*For example, Dr. Holly Peterson and Stacie Barry, MTech, completed an EPA-funded biomonitoring project that evaluated arsenic exposure in domestic pets and other sentinel species. This project went through a rigorous quality assurance, peer review, and publication process by the MTech Mine Waste Technology Program, the MSE Mine Waste Department, and the EPA. The study result indicate an increased risk of exposure to several mining related contaminants, including arsenic, and it suggests that exposure to humans may also be occurring. The results of this study are potentially conflicting with an exposure investigation conducted by ATSDR in 2000, which showed non-detectable arsenic exposure in Walkerville. However, the Walkerville study had a small sample size, was conducted during the winter when all exposure pathways are not well represented, and did not show exposure to elevated blood-lead such that no relationship of exposure between the two metals can be determined. While definitive studies on elevated arsenic exposure to Butte area residents are lacking, an ATSDR Health Consultation conducted in 2001 does show higher rates of cancer in Butte area residents compared to Montana overall.* [Steve Ackerlund—Draft Letter to John Wardell and Richard Opper—August 4, 2009]

The Remedy's assessment of mercury was based on an early study of Walkerville that had significant uncertainties.

The Remedy as currently being implemented fails to give special consideration to the differential health effects of heavy metals exposure and other contaminants of concern—mercury, arsenic, lead, aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium—on low income populations, thus ignoring the EPA's environmental justice mandate. Given that low income citizens tend have poorer health than the non-poor, the EPA should have, but did not, investigated the differential effects of exposure to contaminants of concern on the low-income population of the BPSOU.

The Remedy as currently being implemented is based on an inadequate health risk assessment process in that many elements/contaminants of concern were never subjected to a health risk assessment and the three drivers—lead, mercury, and arsenic—never underwent a comprehensive health risk assessment. Mercury was particularly neglected in this concern. Arsenic was extrapolated from the Anaconda site and little unique work was done in Butte. Action levels were arbitrarily set with different action levels at different sites for the same contaminant. Are we to assume that somehow the toxicology and epidemiology related to toxic elements differs from one adjacent area to another? Is arsenic in Anaconda different than arsenic in Butte? Does Butte have a special kind of lead or mercury? Are the people of Anaconda somehow biologically different than the people of Butte or Missoula or East Helena?

The Remedy as currently being implemented fails to recognize that the arsenic in attic dust did come from smelting operations in the Butte/Anaconda area. Because the attic dust did come from mining related activities, it is directly under the purview of Superfund.

The public involvement plan pursuant to the remedy as currently being implemented needs some benchmarks by means of which success of public outreach is evaluated. At present,

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

there is no way to determine whether or not the community involvement component which is critical for the success of the Remedy as currently being implemented has been successful. What would be considered a successful public involvement/educational plan? We have no way of knowing what constitutes success or failure. Overall, the Remedy, as currently being implemented, presents a very sketchy community involvement plan. Yet, the success of the Remedy as currently being implemented depends on effective community outreach.

It is problematic as to whether the education/community involvement program mandated under the remedy as currently being implemented will reach populations of concern, particularly low-income citizens. Given the Montana EPA track record regarding community involvement in the BPSOU, which has been limited to the traditional/formalistic/ineffective format of formal agency conducted public hearings and informational meetings along with some agency produced written materials, there is little to suggest that target populations, particularly low-income citizens, will be reached and/or motivated to participate in the program. This is contrary to the EPA's Community Involvement policies, rules, regulations and guidance documents. For example, EPA has an environmental justice mandate to be pro-active in attempting to involve low-income citizens in their programs.

The BPSOU Remedy as currently being implemented fails to recognize and accommodate the unique health problems of low-income citizens thus failing to meet EPA's environmental justice mandate. Furthermore, the Plan fails to take into consideration the substandard housing, poor diet and other environmental factors affecting the poor in relation to toxic metal exposure.

There is no assurance that the majority of problematic properties will be identified. There are problems related to absentee landlords, property owners, etc. There are problems in that, if there is no application for a building permit prior to renovation, that kind of property may be ignored.

Given the voluntary nature of participation in the medical monitoring program, what assurances are there that the vast majority of the affected population will be identified and screened?

The Remedy as currently being implemented still mistakenly puts the onus on the property owner or renter or resident to initiate remediation. Such an onus is particularly burdensome to low-income residents. Past experience amply demonstrates that such an approach is not efficacious.

It is not clear and actually very problematic that that there will be enough money to accomplish a comprehensive remedy.

The Remedy as currently being implemented still relies on a non-protective pathways of exposure argument regarding the abatement of attic dust.

DISCUSSION

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

The plan still insists that attic dust will not be remediated unless a pathway of exposure is present.

The contaminated dust found in many BPSOU attics poses a direct threat to human health if people were to be exposed to these contaminants.

The dust obviously entered the attics. What enters can leave, if disturbed. Saying that no pathways of contamination currently exist does not provide any permanent remediation of the threat of toxic attic dust. New and expanded Pathways of exposure can be created by:

Remodeling and Painting

Use of the attics for storage

Weatherization

Deterioration of ceilings.

Damage or deterioration of roofs.

Modifying the attic through such measures as adding electrical wires, skylights, ceiling fans, electric lights or working on the roof.

Fires

Subsidence and cracking

Cleaning

Wind, rain, hail and or water from storm events.

The pathway argument rests on the failed premise that remediation should attempt to keep people from contaminants rather than remove the contaminants from people.

The pathway argument directly contradicts the Superfund requirement for permanent solutions in that human behavior patterns, residential use patterns, and general land use patterns change over time.

There exists no current law, rules, or regulations that would prohibit the owner of a home or the renter of a home from using or disturbing the home's attic.

The pathways argument is contrary to the principles of environmental justice in that this approach means that low-income citizens will continue to bear a disproportionate toxic burden.

The pathways approach is contrary to the principles of the Superfund Redevelopment Initiative and the Superfund Land Revitalization Action Agenda in that it limits or precludes future productive land uses and redevelopment of sites contaminated with toxic attic dust.

The pathways argument is directly contrary to the Principles of Pollution Prevention and the Precautionary Principle, which are embraced by EPA policy, rules and regulations, as well as Montana State Law.

The Libby Cleanup Precedent would warrant addressing contaminated attic dust in Butte.

The Remedy as currently being implemented does not adequately address many metals and mining related toxics of concern and potential risk to the public.

By the EPA's own account (BPSOU ROD), in addition to lead, arsenic and mercury, copper, aluminum, cadmium, iron, silver and zinc are also toxics of concern presently found within the BPSOU. Other studies have found boron, lithium, manganese, molybdenum and selenium to be metals/elements/toxics of risk present at the BPSOU site. (Holly Peterson, 2007. *Domestic Pets as Biosamplers of Mining Related Contaminants*, EPA Mine Waste Technology Program, Butte, Montana.)

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

The Remedy as currently being implemented fails to address these other toxics of concern and risk. I suppose that the assumption is made that if we remediate arsenic, lead and mercury, we will "get" all of these others also. However, there is no substantiation for this claim, the EPA just assumes it. Nor is there any consideration of the synergistic effects of these toxics of concern on human health. Nor is there any consideration of the bioaccumulation of these toxics of concern. Nor is there any consideration of the cumulative effects of chronic exposure by humans to these toxics of concern. (For example, given the reliance on urine sampling to measure arsenic exposure, the EPA probably never would be able to assess the cumulative effects of chronic exposure to arsenic.) Nor has there been an adequate health risk assessment of mercury exposure within the BPSOU. The harmful health effects of the above listed toxics of concern are amply discussed and demonstrated in Stacie Barry's *Toxicology of the Chemical of Concern in Butte, Montana*: Submitted to the Butte-Silver Bow Health Department, June 5, 2008.

In short, the current proposed the Remedy Plan as currently being implemented fails to consider all the potential threats to human health and the environment within the Butte Priority Soils OU in that it neglects many elements with are risky for human health and the environment. Faulty and incomplete data and conclusions based on unsubstantiated assumptions can only compromise the effectiveness of any plan based on such data.

Arsenic found in BPSOU and areas adjacent to the BPSOU is from smelter activities in Butte and Anaconda and, therefore, is directly under the Superfund purview.

Direct Evidence of Causal Link to Mining and Smelting

There is strong evidence that a significant amount of the trivalent arsenic present in attics in the homes in the BPSOU as well as adjacent to the BPSOU came, in large part, from the Anaconda Smelter. The geomorphology and chemical composition of the arsenic contaminated attic dust from the Anaconda Smelter and the geomorphology and chemical composition of the arsenic contaminated attic dust found in homes both within and adjacent to the BPSOU are the same. The arsenic attic dust is smelter arsenic dust. The EPA must stipulate that the arsenic attic dust is smelter arsenic dust.

The prevailing wind patters in Southwestern Montana clearly indicate that the prevailing winds flow from the Anaconda Smelter to Butte—hence a plume of trivalent arsenic contamination could have reached the Butte Hill. According to the National Oceanic and Atmospheric Administration—National Climatic Data Center, the prevailing winds are generally from Anaconda to the Butte area along the I-90 Corridor and are sufficiently strong enough of the time to carry contaminated smelter dust to Butte. A weather chart from the National Weather Service in 1920 shows essentially the same wind directions as today from Anaconda to Butte. Additional support comes from the U.S. Forest Service, which in their various Forest Fire Suppression Documents and Reports, notes that the typical wind direction is from west to east as can be readily seen by the extent of smoke and particulate matter in the Butte area from fires occurring west of Butte. Ash from forest fires is denser and heavier than airborne particulate matter from the Anaconda smelter. The EPA Superfund ROD for the Anaconda Smelter (09/30/1996) also notes that the prevailing wind pattern is from west to east with most arsenic and heavy metal contamination found east of the Smelter stack.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

The Final Risk Assessment-BPSOU Baseline Human Health Risk Assessment for Arsenic, April 29, 1997 notes: "Aerial emissions from the mills and smelters, **as well as the Anaconda Smelter**, also contributed to the BPSOU." (p. 1-2, emphasis supplied.)

It is important to note that inorganic, trivalent arsenic contamination releases result from the ore smelting process. (See: Paul F. Holt, *Inhaled Dust and Disease*, (New York: John Wiley and Sons, 1987. See also: *Arsenic* (ATSDR)"While arsenic is released to the environment from natural sources such as wind-blown dirt and volcanoes, releases from anthropogenic sources far exceed those from natural sources." (ATSDR) Mining and smelting are major causes. "The soil receives arsenic from a variety of anthropogenic sources, including. . . smelting operations, mining wastes. Mine tailing and smelter slag was estimated to add an additional, 200-11000 and 4,500 –9000 metric tons respectively. . . .abandoned mine tailings add still more."

Indirect Evidence of Causal Link to Mining and Smelting

There is no other possible source of the contaminated attic dust in Butte than the Anaconda Smelter.

Turn of the century and early 20th Century smelters in Butte are not the source of present day attic dust contamination in that contamination is found in homes both within and adjacent to the BPSOU that were built long after these early Butte smelters closed.

Coal burning is not the source of the present day attic dust contamination, as some allege, in that many homes with contaminated attic dust were built long after coal burning had ceased in Butte. Contamination is not found in attics of homes that were built **after** the Anaconda Smelter closed in 1980.

To the extent that trivalent arsenic is found in the attics of homes constructed after smelter operations ceased on the Butte Hill, the 1920s, there would exist the strong presumption that such arsenic emanated from Anaconda. By the EPA's own assumptions, trivalent arsenic was not characteristic of the arsenic found in Butte soils but is characteristic of the arsenic found in Anaconda.

Conclusion: The Anaconda Smelter would seem to be the only practical source for this trivalent arsenic found in Butte attic dust. What other major source exists? Thus, the presence of arsenic in BPSOU attics is a direct result of mining activity which contamination is covered by Superfund.

The BPSOU Remedy as currently being implemented fails to recognize and accommodate the unique health problems of low-income citizens thus failing to meet EPA's environmental justice mandate. The public involvement plan also fails to recognize and accommodate the unique problems of reaching low-income citizens thus failing to meet EPA's environmental justice mandate.

I make the following arguments that lead to the clear conclusion that the EPA needs to be more aggressive in attacking the BPSOU toxic attic dust problem. It is a human health issue and an environmental (social) justice issue:

A significant number of homes in the BPSOU are substandard and deteriorating.

A disparate concentration of poor is found living in this substandard BPSOU housing.

Many, if not most, of these substandard BPSOU homes are contaminated with toxic attic dust which constitutes a severe threat to human health, particularly the health of children

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

This contaminated and toxic attic dust is found in BPSOU homes as the direct result of mining related activities. Hence, such toxic attic dust is clearly within Superfund's purview.
There is a great risk of exposure to toxic attic dust in substandard homes, particularly as compared to homes of good quality.
Superfund was designed to remediate these human health threats.
Superfund, in remediating human health threats, must also address environmental justice concerns.
The concentration of toxic attic dust in the BPSOU raises an environmental (social) justice issue.
The EPA's current approach to remediating toxic attic dust in the BPSOU is inadequate in that it will only address the toxic attic dust issue if there is a clear and present pathway of contamination within a home which leads to exposure of inhabitants to the toxic dust.
The EPA's current approach to remediating toxic attic dust in the BPSOU violates EPA environmental justice mandate in that it perpetuates a disparate toxics burden on the poor in the BPSOU.
Even though the Record of Decision for Priority Soils has been issued, EPA still has the regulatory flexibility and authority to change its approach to remediating toxic attic dust. EPA should change its approach, in the ways suggested in this paper, to more aggressively monitor and remediate toxic attic dust. Failure to undertake these changes would be contrary to the Superfund mandate to clean up sites, to protect human health and the environment and to make sites free of toxics in a permanent manner and would be contrary to EPA's environmental justice mandate.

The quality of the housing stock in the BPSOU is poor, the housing stock has a disproportionate number of low income citizens living in this housing, this housing stock is contaminated with toxic attic dust, and due to its substandard nature, it is likely that exposure of residents to this toxic attic dust will continue to occur:

According to a study commissioned by the Butte/Silver Bow Planning Board, ". . . much of the housing stock in the older town site is in a state of decay. Decay of the housing stock in much of Census Tracts 1 and 2, which encompass the area north of Front Street to Walkerville and the upper and lower west sides of the urban cluster are contributing to a significant aesthetic crisis and have created an economic development barrier for the community. Retail activity in the central business district is inherently impacted by a loss of people, by vacant and blighted structures and by high poverty in these areas." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-5)

According to the Center for Applied Economic Research for the Montana Department of Commerce, about 73% of the substandard housing units found in Butte are within the confines of the BPSOU. According to the report, this amounts to 2600 housing units. (Quoted in *Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-5)

According to the Planning Board sponsored report: "The County's poor population is being isolated in the most blighted areas of the community. The older town site (Census Tracts 1 and 2), which contains an approximated 73 percent of the community's substandard housing units, (2600) units, is also home to 52 percent of people living below the federal poverty line. Living below the federal poverty line indicates people do not have enough resources to purchase the

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most basic goods and services for survival. Lower income families and individuals are segregated in blighted areas of Butte-Silver Bow; many are living in substandard conditions while paying more than 30% of their monthly incomes for housing costs. Disabled people, many of whom have extremely low incomes, are a subset of the impacted group." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, pp. 2-3 and 4) Note: Butte Census Tracts 1 and 2 are in the BPSOU.

Substandard housing disparately affects the poor who live in Butte more than the non-poor. The housing problems in the BPSOU are part of the overall poverty problem in Butte. According to the 2000 Census, 10.7% of Butte families live in poverty, compared to 10.5% across the state. About 15% of the Butte population lives below the poverty line. Also, according to the 2000 Census, close to 25% of Butte families with children under the age of five years have incomes below the official poverty line. Fifty-eight percent of the homes without fathers have incomes below the official poverty line. According to the Montana Department of Public Health and Human Services, in 2002, about 2.4% of Butte's citizens were receiving Temporary Assistance for Needy Families compared to the state average of 1.89%. Over 10% of the Butte population was receiving food stamps compared to 7.56% statewide.

Low-Income Renters are a major component of the BPSOU housing occupants. (The percentage of households with incomes less than $25,000 is 42% in Silver Bow County compared with 28% for the nation and 38% for Montana. Further, 41% of families are considered low-income; seventy percent of renters have incomes less than $25,000 and 81% of them are concentrated in Census Tracts 1 and 2 (BPSOU) where there are an estimated 2600 substandard units. Thirty percent of households occupying rental units are experiencing a cost burden by contributing more than 30% of their income to housing costs." *Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-2) 32% of renters in the age range 25-34 have annual income below the poverty level. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-1)

30% of children in Butte live in high poverty neighborhoods in the BPSOU. "Silver Bow County ranked first (highest) in Montana in the poverty rate for population under 18 years of age; the percentage of children living in high-poverty neighborhoods (coterminous with the BPSOU); and the average number of food stamp recipients per month." *(Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-40)

Deep poverty persists within the BPSOU. 59% of the high poverty block groups in Silver Bow County are found within the BPSOU. The BPSOU area "contains 52% of the county's poor while only comprising 29% of the total population. Of particular note are Bock Groups 4 and 5 in Tract 1 where poverty rates were 47% and 61% respectively in 2000." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-28)

Resident flight from the BPSOU is continuing and contributing to the decline and deterioration of the area. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-8)

Studies also indicate that the vast majority of the poor live in the area encompassed by Butte Priority Soils. For example, of the 1200 houses in Butte that have had a high risk of lead, the vast majority are in the Butte Priority Soils site. The risk of exposure to contaminated arsenic in

attics is much higher in the BPSOU than anywhere else in Butte. The housing stock in the BPSOU is more deteriorated and dilapidated than anywhere else in Butte and is overwhelmingly substandard. Compared to Butte as a whole, the low-income citizens living in the area encompassed by the Butte Priority Soils Operable Unit bear a disproportionate burden of exposure to toxics compared to the rest of the community. Comparing income levels to quantity of toxics present clearly demonstrates that low-income citizens in Butte bear a disproportionate toxics burden. The poor in Butte have a greater risk of cancer from exposure to heavy metals than do the non-poor. Given weakened immune systems which weaknesses are greater in the poor than the non-poor, given inadequate diets which are more prevalent in the poor than the non-poor, given lack of access to adequate medical treatment which is more prevalent in the poor than the non-poor, given the detrimental health effects of living in substandard housing which is more prevalent for the poor than the non-poor, the poor in Butte are more threatened by the release of toxic, heavy metals associated with mining than the non-poor. (See: Environmental Defense Fund, *Summary Report: Silver Bow County*, 11/24/03.)

The poor residents of central Butte lack the financial ability to either (1) move into better housing within the district or (2) move out of the BPSOU area into better housing. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006)

Many of these homes have attics that are contaminated with toxic arsenic dust.

"The age of the house and the design, construction, and condition of the house structure largely determine the entry of ceiling dust to the living areas of a dwelling. Dwellings in good condition rarely show evidence of ceiling dust entering the living areas of the house. Older dwellings and those in need of repair tend to show more signs of ceiling dust encroachment through cracks and vents." (Jeffrey J. Davis and Brian L Gulson, "Ceiling (attic) dust: A 'museum' of contamination and potential hazard," *Environmental Research*, Volume 99, Issue 2. October 2005, Pages 177-194) These findings are particularly relevant given the generally poor condition of housing stock within the BPSOU.

The conclusions reached by points 1-13 above are:

Butte has a high rate of poverty compared to the rest of the nation and Montana.

These poor live overwhelmingly within the BPSOU. The "poor-poor," which is a subset of the poor, also live overwhelmingly within the BPSOU.

A major subcategory of the poor and "poor-poor" living within the BPSOU are children, the elderly and the disabled.

These poor live in substandard housing within the BPSOU.

The poor living in the BPSOU area have a greater level of exposure to contaminated and toxic attic dust than the non-poor.

Next, let us consider the degree of toxic attic dust contamination found in these substandard homes within the BPSOU and the health effects of this contamination.

Regarding the health effects of toxic attic dust found in housing units in the BPSOU, we know the following:

Inorganic arsenic, found in attics in the BPSOU, even at low levels of exposure, poses a serious threat to human health. Arsenic has been designated a human carcinogen. Arsenic can cause cancer of the lungs, liver and skin. Long-term exposure to arsenic can cause alterations in mental functions and depression. (*Staying Healthy in a Risky Environment*, New York University Medical Center, p. 365 and 428) Arsenic exposure at low doses can cause nerve damage, cardiovascular problems, skin problems and constitutional complaints such as nausea, diarrhea,

gastrointestinal upset, etc. (Johnson and DeRosa, ASTDR, "The Toxicologic Hazard of Superfund Hazardous Waste Sites") [See also: Paul F. Holt, Department of Chemistry, University of Reading, UK, *Inhaled Dust and Disease*, p. 245. which discusses the causative effect of arsenic on heart disease.] Arsenic targets most of the body's organs and is particularly harmful to the gastrointestinal tract and to the skin. Outdoor play is a common arsenic exposure route for children. Attics in the Butte Priority Soils area are contaminated with a host of toxics, in addition to inorganic arsenic, related to past mining/smelting activities.

More specifically, the trivalent arsenic found in BPSOU attics is a proven human carcinogen. One form of human cancer directly linked to trivalent arsenic is skin cancer that has above average levels in Butte. (NIOSH, Tenth Report on Carcinogens, *Arsenic Compounds, Inorganic*. See also: International Agency for Research on Cancer, *IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man*, Vols. 2 and 23 and Supplements 4 and 7, USEPA, Integrated Risk Information System, *Arsenic, inorganic* (CASRN 7440-38-2) and Dennis M. Opresko, Ph.D., Chemical Hazard Evaluation and Communication Group, Biomedical and Environmental Information Analysis Section, Health and Safety Research Division, Oak Ridge Reservation Environmental Restoration Program, Risk Assessment Information System, 1997)

Not only is trivalent arsenic carcinogenic, even at low doses, [Arsenic exposure at low doses can cause nerve damage, cardiovascular problems, skin problems and constitutional complaints such as nausea, diarrhea, gastrointestinal upset, etc. (Johnson and DeRosa, ASTDR, *The Toxicologic Hazard of Superfund Hazardous Waste Sites*)] but it is also genotoxic. (Mass et al.,*Chem. Res. Toxicol.* 14:355-36, April 16, 2001) The EPA has specifically endorsed this genotoxic conclusion. (April 2001) "Inorganic arsenic is readily absorbed through ingestion and is widely distributed in the human body. It does not need metabolic activation to exert its effect." (Chiou, et. al., *Incidence of transition cell carcinoma and arsenic*, American Journal of Epidemiology 153 (5): 411-418, 2001)

Moreover, there are no known safe levels of exposure to inorganic arsenic. Trivalent arsenic bioaccumulates in tissue and is excreted very slowly. (Dr. Ronald Brecher, *Arsenic*, EBI, Canada and Aapo Saask, *The Arsenic Challenge*, Scarab Development AB, Stockholm, Sweden)

Finally, trivalent arsenic causes a host of other serious medical problems. (Holt, *Inhaled Dust and Disease*, *op. cit.*; Norman Trieff, *Environment and Health*, Ann Arbor Science Publishers Inc.; Graber and Upton, *Staying Healthy in a Risky Environment: The New York University Medical Center Family Guide*; ATSDR; OSHA; NIOSH; and USEPA.)

Trivalent Arsenic is one of the major contaminants of attic dust on the Butte Hill. The gross geologic morphology of the attic arsenic dust would lead to that conclusion.

There is strong evidence that a significant amount of the trivalent arsenic present in attics came from the Anaconda Smelter.

To the extent that trivalent arsenic is found in the attics of homes constructed after smelter operations ceased on the Butte Hill, the 1920s, there would exist the strong presumption that such arsenic emanated from Anaconda. By the EPA's own assumptions, trivalent arsenic was not characteristic of the arsenic found in Butte soils but is characteristic of the arsenic found in Anaconda.

The prevailing wind patters in Southwestern Montana clearly indicate that the prevailing winds flow from the Anaconda Smelter to Butte—hence a plume of trivalent arsenic contamination could have reached the Butte Hill.

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The Final Risk Assessment-BPSOU Baseline Human Health Risk Assessment for Arsenic, April 29, 1997 notes: "Aerial emissions from the mills and smelters, **as well as the Anaconda Smelter**, also contributed to the BPSOU." (p. 1-2, emphasis supplied.)

Inorganic arsenic contamination releases result from the ore smelting process such as occurred very early in Butte, ending in the 1920s, and most prominently and recently in Anaconda. (See: Paul F. Holt, *Inhaled Dust and Disease*, (New York: John Wiley and Sons, 1987. See also: *Arsenic* (ATSDR)"While arsenic is released to the environment from natural sources such as wind-blown dirt and volcanoes, releases from anthropogenic sources far exceed those from natural sources." (ATSDR) Mining and smelting are major causes. "The soil receives arsenic from a variety of anthropogenic sources, including. . . smelting operations, mining wastes. Mine tailing and smelter slag was estimated to add an additional, 200-11000 and 4,500 –9000 metric tons respectively. . . .abandoned mine tailings add still more."

Conclusion: The Anaconda Smelter would seem to be the only practical source for this trivalent arsenic found in Butte attic dust. What other major source exists? Thus, the presence of arsenic in BPSOU attics is a direct result of mining activity which contamination is covered by Superfund.

The 1997 Health Risk Assessment for arsenic and subsequent health studies for Butte Priority Soils do not specifically and directly consider trivalent arsenic found in Butte attics. The 1997 Health Risk Assessment for arsenic and subsequent studies only consider the levels of trivalent arsenic found in soil as a potential source of the dust home contamination problem. This is deceptive in that arsenic is water soluble and would have been washed away to a large extent given rain, snow melt, wind, etc. However, the fine trivalent arsenic dust found in attics would not have been washed away by rain and snowmelt. Wind would not have blown away the trivalent arsenic found in attics. It is totally plausible that there would be low level of trivalent arsenic in the soil while having high levels of trivalent arsenic in attics. Arsenic does not lose it toxicity over time.

The contaminated dust found in many BPSOU attics poses a direct threat to human health if people were to be exposed to these contaminants. The EPA needs to be more pro-active in reaching out to low-income residents who are disproportionately concentrated in the Butte Priority Soils Site. Yet, no provisions occur in the proposed Multi-Pathway Residential Metals Abatement Program Plan for reaching out to, including, and involving low-income citizens in the Multi-Pathway Residential Metals Abatement Program.

Given the concentration of the poor in the substandard housing units of the BPSOU, which are contaminated in a disparate manner with toxic attic dust, the poor bear a disproportionate toxics burden. ***Consider:*** On February 11, 1994, through Executive Order 12898, President Clinton declared that: "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States." According to the EPA, the President's concern was that: "minority and low-income populations bear a disproportionate amount of adverse health and environmental effects." Today, the EPA further defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, ***implementation, and enforcement*** of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial,

municipal and commercial operations ***or the execution of federal, state, local, and tribal programs and policies***." (Emphasis supplied.) EPA administrator Whitman in August 2001 stated that environmental justice would be an integral part of all EPA programs, policies, and activities. According to Whitman, the goal of the EPA's Environmental Justice program is that no segment of the population, including low-income citizens, suffers disproportionately from the EPA's policies, programs and activities. Furthermore, EPA has a mandate to provide for the equitable distribution of the burden of cleaning up sites. (The Office of Solid Waste and Emergency Response [OSWER] in their *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* mandates that "Environmental Justice issues should be considered at all stages of policy guidance and regulation development, beginning with preliminary efforts" and that environmental justice should be integrated into all agency actions. (OSWER Directive 9200.3-18FS, EPA540/F-95/023)

This above OSWER Directive also mandates that the economic/regulatory impacts of EPA decisions be considered in terms of environmental justice issues. Part of the EPA's environmental justice strategy is to promote a "sustainable economy" in areas affected by EPA rules, policies and programs. For example, OSWER Directive No. 9200.3-17 entitled *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* states: "Where environmental justice concerns or the potential for concerns are identified, staff should conduct an appropriate analysis of the issues(s). To the extent practicable, staff should evaluate the ecological, human health (taking into account subsistence patterns and sensitive populations) and socio-economic impacts of the proposed decision document on minority and low-income communities. Examples include how a policy on future land use would impact minority or low-income communities versus non-minority, affluent communities. The analysis should be documented and retained for public availability." (**This has not been done by the Montana Office of EPA for Priority Soils**.) The point is that the Montana Office of EPA has a mandate to consider how its enforcement/abatement actions will disproportionately and adversely economically affect low-income areas and has a mandate to mitigate disproportionate adverse economic impacts on low-income citizens. (See: *Incorporating Environmental Justice Principles into the CERCLA Process*, May 1998.) Low-income citizens should not bear a disproportionate or undue regulatory burden when it comes to the development of cleanup activities. (EPA, Region 8, *Environmental Justice Action Plan*, April 2003)

The Region 8 of EPA also equates environmental justice with the legal concept of equal protection under the law. In April of 2003, Region 8 issued its *Environmental Justice Action Plan* which mandates that the agency will work with stakeholders to "correct and prevent inequitable environmental and public health impacts to any groups." In short, environmental justice mandates a particular concern with populations, such as low-income populations, that bear a disproportionate burden of environmental degradation and environmental regulations. "Fair treatment means that no group of people, including a racial, ethnic, or social economic group should bear a disproportionate share of the negative . . .consequences resulting from . . .the execution of federal, state, local and tribal programs and policies." (Headquarters Press Release, EPA, *Administrator Whitman Reaffirms Commitment to Environmental Justice*, August 21, 2003)

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In meeting its obligation to remove in a permanent manner threats to human health and in meeting its obligation to promote environmental justice, the EPA choose to leave toxic attic dust in place and only remediate after dust was found to be contaminating living areas.

Superfund was designed not only to deal with actual harms to human health and the environment but also with threatened harms and potential threats. CERCLA specifically deals not only with release of hazardous substances but also with the "threat of" release "into the environment of a hazardous substance or pollutant or contaminant. CERCLA defines each of these terms quite broadly." (*Environmental Law Handbook*, p. 76.) Also, Superfund places an emphasis on treatment rather than containment for hazardous waste. [EPA, "Rules of Thumb for Superfund Remedy Selection," 40 CFR 300.430 (a)(1)(iii)(A)] Yet, in the Record of Decision for the BPSOU, the EPA determined that a one time evaluation of the living spaces of homes in order to determine whether or not toxic attic dust was present was sufficient to meet it burden of protecting human health and promoting environmental justice. It is hard to fathom how EPA could argue that a one-time evaluation of homes was sufficient in order to achieve this purpose.
Based on what we know regarding toxic attic dust within the BPSOU and what we know concerning housing within the BPSOU, the following conclusions are warranted regarding evaluation of homes in the BPSOU for toxic attic dust exposure:
Toxic attic dust poses a threat to the health of residents of BPSOU.
Given the deteriorated and substandard condition of most of the housing units within the BPSOU and given the ease of creating new and/or expanded pathways of contamination, eventually, contaminated attic dust will seep into living areas and expose residents to toxic contamination.
This toxic burden falls disproportionately on the poor living with the BPSOU area and is not only a human health issue but also an environmental justice issue.
Given the deteriorated housing stock in the BPSOU, the EPA needs to be much more aggressive in attacking the problem of contaminated attic dust both in terms of more frequent inspections and evaluations of property (one-time inspections are clearly not enough) and more rigorous measures to prevent pathways of exposure to contaminated attic dust from opening up.
It is contrary to the EPA environmental justice mandate to place the burden on the poor to monitor and report possible contamination exposure. The poor may well lack: knowledge of the contamination's presence, the dangers such contamination poses and how to report possible exposure and whom to report it to. Low-income citizens may be fearful of reporting potential exposure to a government entity, may be fearful of incurring personal liability by reporting or getting into trouble by reporting, if renters, residents may be fearful of getting "in trouble" with the owner, and residents may have a lack of knowledge of how the bureaucratic Superfund process works (after all, it is pretty Byzantine).
The EPA has the regulatory authority to modify institutional controls within the BPSOU in order to more fully assure that attic dust contamination is not entering into living areas within the homes of BPSOU.
It is problematic as to whether the Remedy as currently being implemented will reach populations of concern, particularly low-income citizens.

The citizen education/community involvement approach articulated in the Remedy is inadequate. Yet, this educational/community involvement component is critical for the success of the Abatement Plan. The Plan's approach places the burden of avoiding exposure to toxic wastes on the residents of Butte Priority Soils. Effective resolution of liability obligations is shifted from

the PRPs to the non-liable citizens. This is a total convolution of the Superfund process that calls for cleaning up an area in order to protect human health and the environment. Superfund is not an education program but a cleanup program. Superfund places the liability for cleanup on those legally responsible for the pollution, not the victims of pollution.

The EPA mandate for meaningful public participation is particularly pronounced when it comes to providing opportunities for meaningful participation by low-income citizens. On August 9, 2001, EPA administrator Christine Todd Williams issued a memorandum entitled "EPA's Commitment to Environmental Justice" which in part stated: "The agency defines environmental justice to mean the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws and policies, and their meaningful involvement in the decision making processes of the government." She goes on to state that environmental justice means that everyone has "equal access to the decision-making process to have a healthy environment in which to live, learn, and work." The *Region 8 Action Plan* for environmental justice issued in April 2003 mandates a pro-active approach to include, among others, low-income citizens.

Although the institutionalized mechanisms and forums of participation have been provided with regard to Butte Priority Soils, contrary to EPA policy, there have been no pro-active attempts to specifically include or encourage low-income citizens to participate in the decision-making process. On August 21, 2001, the EPA stated that: "Fair treatment means that no group of people, including a racial, ethnic, or social economic group should bear a disproportionate share of the negative environmental consequences resulting from. . .the execution of federal, state, local and tribal programs and policies." Meaningful participation as defined by EPA is that "the decision makers seek out and facilitate involvement of those potentially affected." In April 1995 the EPA issued "The Environmental Protection Agency's Environmental Justice Strategy" which mandates that the EPA needs to reach out to, among others, low-income residents and needs to afford them particular consideration in the development and execution of EPA policies, rules, regulations and guidelines. Sylvia F. Liu, Attorney, Environment and Natural Resources Division of the U.S. Department of Justice, in an article entitled: "Environmental Justice: An Overview of Legal Issues," states that agencies should: "Consider conducting outreach to the affected communities to promote participation in agency decision-making process concerning remedies." (February 2000) So far, no specific outreach has been directed to the low-income citizens within Butte Priority Soils. So far, the EPA has not reached out specifically to the low-income citizens who live within the Priority Soils area.

There have been developed no outreach programs that specifically target low-income residents of Butte. There has been extended no particular consideration of the effects of a waste-in-place solution on the low-income residents of Butte. The above lack of special attention to the low-income residents of Butte is at variance with the principles of environmental justice mandated under EPA rules, regulations, and policies. The proposed education program makes no special accommodation for reaching low-income citizens.

Public/stakeholder input is supposed to impact and shape EPA decisions. Public/stakeholder input is supposed to inform and be taken into consideration as EPA formulates a remedy. It is

hard to see how low-income citizens can impact EPA decisions regarding Priority Soils if they are not specifically represented in the decision making process.

Summary--Public Participation and Environmental Justice:
It is a basic tenet of democratic decision making that: "on all matters where social action is substituted for individual action, liberty exists only through participation either in decision making or in control of leaders who make the decisions." (Emmette Redford-*Democracy in the Administrative State.*) It is not just the ethics of democracy that mandates citizen participation, but the quality of public decisions is enhanced by public participation. The more people who are substantively involved in making a decision, the more information and the more perspectives that are brought to that decision. Public participation means that more alternative solutions are considered and the resulting decision will have greater credibility and legitimacy. Meaningful public participation promotes public civic education and increases trust in government institutions. Efficiency is also enhanced by public participation in that public acceptance of an agency decision decreases the likelihood of prolonged challenges to that decision. The law also mandates that most public agencies take into account public comments in rendering their decisions. EPA policies, procedures, rules, and guidance documents certainly mandate significant and consequential public involvement.

Agency personnel should not view the provision for meaningful public involvement as simply a procedural hurdle that need only be formally addressed. There are valuable contributions that the public can make to the Superfund decision-making process.
Citizens know best how a decision will affect their interests.
Citizens know the local area.
Because it is concerned with the making and enforcing of government policy decisions, Superfund decision-making is as much, if not more, a political process than it is a scientific process. Cleanup decisions cannot be determined with the certitude of a mathematic or scientific theorem. Although there are those who would seek to avoid conflict by an appeal to the certainty of science (after all you can't argue with science), an appeal to "good science" cannot eliminate conflict. Correct environmental decisions lie in the realm of the probable and contingent not the certain and absolute. As an inherently political process, the public must not only be involved but also allowed to be effective in their participation by decision makers. For example, consider Superfund's nine criteria for remedial alternatives evaluation. These criteria do not have scientific or technological certainty or precision. How they apply to perspective decisions, what they mandate and what they do not mandate, how they relate to each other, what they mean, and their significance are the result of political processes, bargaining and decision making. If one takes cost, for instance, how do you determine with scientific and technical certainty whether or not an alternative costs too much? The very standards such as contaminant action levels and the risk assessment process are infused with politics. Often action levels are the result of political bargaining and represent the lowest common denominator of what is acceptable to the various groups fighting about where the levels should be placed. The notion of value neutral decisions in Superfund is unobtainable.
Even decisions that are based in science and technology **have to be open to public scrutiny and comment.** The expert must offer his or her expert opinion to the public in the public realm. The expert's opinion must be tested, analyzed and evaluated in the public realm. We do not, even in

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environmental decision-making, have a government of experts. To this end, it is important to remember that not all expertise resides in government or the PRPs. Members of the general public often have extensive knowledge, experience, and expertise in the areas under consideration in Superfund. The wanton corporate hubris displayed at a recent meeting on Priority Soils where public input was characterized as the articulation of "feelings" is a disservice and mischaracterization of the value of the public participation process. Unfortunately, some Montana EPA officials buy into this characterization of the nature and value of public input.

For reasons already articulated, the public has a right to participate in Superfund decision-making. The low-income citizens living in the Butte Priority Soils area have a special right to participating in decision-making regarding the site. For reasons already articulated, EPA rules, policies, procedures, and guidance documents mandate efficacious and meaningful public involvement, particularly on the part of environmentally disadvantaged groups such as low-income citizens. For reasons already articulated, public participation produces sound environmental decisions. The specifics of my complaint address the issue of whether or not the Montana EPA really values public input into the decision making process regarding Butte Priority Soils. Does the Montana EPA allow public input to really impact a decision? Does the Montana EPA see public involvement, particularly involvement by low-income citizens as meaningful and efficacious? Does the Montana EPA afford meaningful opportunities, not just formal venues, for participation by low-income citizens? Given recent comments by Montana EPA decision makers, unfortunately, in terms of deeds, the answer is no. While the forms of public participation are present, the substance of efficacious public participation is missing. It will be the low-income citizens of the Butte Priority Soils area who will continue to bear a disparate toxics burden as a result of the failure to provide for meaningful public participation in the decision making process surrounding Priority Soils.

To me this is a significant test case regarding the efficacy of public involvement in Superfund decision-making. Does the Montana EPA really assign any weight to public involvement? Are we just going through the motions? If issues are effectively off the table of efficacious public discussion, if the primary elements of a remedy have already been determined regarding the "soils" element of Priority Soils while we are still in the RI/FS process, if the purview and purpose of citizen input can be limited to what the agency would like, if major emergency actions already taken are beyond public scrutiny and if significant elements of the remedy can be instituted by a PRP prior to the completion of the RI/FS and public comment, public participation in the Priority Soils decision has no substance. Some of the venues of public participation are there but the reality is absent, particularly for low-income citizens. What we have is "environmental theatre" where the script is already written, the outcome is already determined and the actors are simply playing pre-assigned parts and reading predetermined dialogue. Public participation in Superfund decision-making should be considered by the Montana EPA to be more than histrionics.

It is clear EPA policy that special effort needs to be made to ensure the maximum level of participation by low-income citizens. So far no special efforts have been made to ensure meaningful participation on the part of low-income citizens who live within the Priority Soils area.

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Caps are not Permanently Protective of Human Health and the Environment.

Yet, the BPSOU Remedy as currently being implemented makes extensive use of capping toxic waste left in place.

Problems with caps:
Metals can be remobilized through bio-irrigation. (Dueri, Sibylle, et. al., University of Laval, Quebec, "Modeling the Transport of Heavy Metals through a Capping-Layer: The case Study of the Flood Sediments Deposited in the Saguenay Fjord, Quebec.")
The long term efficacy of caps can be compromised by advection "related to consolidation, diffusion, chemical reactions, and the effect of . . . burrowing activity." (*Ibid.*)
Desiccation can cause cracking of the cap cover. (David Daniel, Professor of Civil Engineering, University of Texas, *Geotechnical Practice for Waste Disposal*)
The freeze-thaw cycle can produce changes in the structure and fabric of the cover and a way that increases hydraulic conductivity. (*Ibid.*)
Caps are difficult to construct correctly. (*Ibid.*)
Caps are difficult to maintain and repair. (*Ibid.*)
Erosion is a serious problem. (Jack Caldwell, U.S. Department of Energy, *Principles and Practice of Waste Encapsulation.*)
Biointrusion can compromise the effectiveness of the cap. (*Ibid.*)
Differential settlement of the cap can cause cracking. (Oweis and Khera, New Jersey Institute of Technology, *Geotechnology of Waste Management.)*
Caps require regular and often expensive repair. (*Ibid.*)
Stabilization of the cap is a problem. (*Ibid.*)
Caps present long-term subsidence and settlement issues. (*Ibid.*)
Because of their susceptibility to "weathering, cracking and subsidence" caps have limited long term utility. "Wind, rain, and generalized erosion over time can severely damage even a well-designed . . . cover." (U.S. Department of Energy, Office of Environmental Management, "Remediation Technology Descriptions: Containment.") See also: Merritt, Frederick (ed.) *Standard Handbook for Civil Engineers*, McGraw-Hill, New York.

The extensive use of caps as a cleanup method for Butte Priority Soils would do nothing to reduce the toxicity and volume and mobility of contaminants. Caps do nothing to clean up a site. The extensive use of caps as a cleanup method for Butte Priority Soils would not provide a permanent remedy. The extensive use of caps as a cleanup method for BPSOU would violate the Superfund mandate for treatment over containment. In short, the extensive use of caps for the BPSOU would not be protective of human health and the environment.

Institutional Controls—The Public should be concerned about too great a Reliance on Institutional Controls for the Remedy as currently being implemented.

Institutional controls per se do nothing to reduce the mobility, toxicity, or volume of contaminants. Institutional controls do nothing to clean up a site. The institutional controls being considered in the EPA's RI/FS for Priority Soils would seriously limit productive land uses and greatly compromise the property rights of owners to use their land as they determine. The

extensive reliance on institutional controls is also contrary to the Superfund mandate of preference for treatment over restricted land use. Institutional controls do nothing to treat a site. The EPA's own document "Rules of Thumb for Superfund Remedy Selection" states that the law mandates a clear preference for treatment over all other approaches. "EPA expects to use treatment to address the principal threats posed by a site. . . ." [40 CFR 300.430(a)(1)(iii)(A)]. The above document also notes: "Institutional controls. . .generally shall not substitute for more active measures. . . ." (pp. 12-13)

The EPA itself has found significant problems with institutional controls at its other sites. In an article entitled "EPA, Think Tank Studies Show Superfund Land-use Controls Flawed, December 10, 2001" which summarizes "Superfund Report via Inside EPA.com" by Resources for the Future, we find these conclusions, ***reached by the EPA itself***, which due to their significance, I will quote at length:

"EPA and environmental think tank studies have shown that the federal and state governments' land-use restrictions at Superfund sites, known as institutional controls (IC), are seriously flawed, with an agency study showing the controls are not reliably implemented and the think tank report finding the controls are dramatically under-funded."

"During a November 27 land use control summit, sponsored by the International City/County Management Association (ICMA), EPA officials and the Environmental Law Institute (ELI), outlined numerous shortcomings they have found with EPA's IC monitoring and enforcement efforts nationwide. While EPA released the results of a study showing EPA has failed to ensure Superfund ICs are reliably implemented, and ELI study indicates that EPA's ICs are dramatically under-funded."

"Bruce Means, of EPA's Federal Facilities Restoration and Reuse Office, told attendees that preliminary studies show that half of the ICs implemented under Superfund records of decisions (ROD) were mischaracterized. During a study of RODs conducted during 1999 and 2000, the agency found that half of the ICs established under RODs were not implemented as the agency had planned."

"And Jay Pendergrass of ELI outlined the preliminary findings of ELI's study of state's IC programs, which showed that the programs are severely under-funded."
"In a draft version of the report, Pendergrass found that state environmental programs are underfunded and as a result the sites allocate very little time on IC implementation. The funding and staffing shortfall 'raises concerns about whether [ICs] are implemented as intended and [are] as protective as intended."

"An ICMA source agrees that EPA has serious problems with its IC program, saying that the agency has many RODs with vague or inconsistent references to such controls."
(pages 1-2)

The greater the cleanup of the Butte Priority Soils Operable Unit, the more the site can be used productively. The less cleanup of the BPSOU, the less the site can be used for residences and recreational uses. Given the EPA's admission that institutional controls have failed it in the past,

it is amazing that the remedies listed in the RI/FS for Priority Soils call for such extensive use of institutional controls.

Other Problems with Institutional Controls:

There is a tendency not to implement institutional controls as time passes. Frequently institutional control mandates are not carried to completion.

The effectiveness of institutional controls usually depends upon the ability, personnel and resources of the local government to implement. Often local governments do not have the personnel or resources to devote to the implementation and monitoring of institutional controls. Given the national administration's proposed cutbacks in Superfund allocations, resources will be increasingly unavailable on the national level to monitor implementation and effectiveness of institutional controls. Certainly the financial capacity of Butte's local government to implement and monitor institutional controls is greatly limited. Nowhere does the EPA's comprehensively address the above issue.

"Institutional controls rely heavily on humans to implement, oversee, and administer them. It is human nature to ignore tasks that no one else seems to care about or where the purpose is not readily apparent. Residual hazardous substances are a classic example of a problem that is not readily apparent." ("Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge?" Environmental Law Institute, p. 2)

Although EPA must review the remedy every five years, the frequency of this review process may be insufficient to detect the failure of institutional controls.

The use of education as part of the institutional controls strategy is a substantial part of the EPA's approach to implementing institutional controls. Research of previous remedies under Superfund indicates that education programs fail to materialize.

"In addition to the direct costs of implementing institutional controls, their use can impose substantial indirect costs on communities, property owners, prospective purchasers and developers by limiting the ways a site may be used. The burden of the restrictions on use of the site falls on the property owner and the community, with the owner reaping potentially lower profits from use of the property and the community receiving lower social benefits from the allowed uses than would have been possible if no restrictions existed." (ELI, *Ibid.)*

Because the sites where institutional controls will be implemented will not be cleaned up and will present a continuing potential threat to human health, these sites will be off limits to development in perpetuity. It is difficult to see how the use of institutional controls meshes with the goals of the EPA's Superfund Redevelopment Initiative.

It is impossible to determine future possible land uses for the site nor is it possible to predict unanticipated land uses. (See: "Linking Land Use and Superfund Cleanups: Uncharted Territory," by Probst, Hersh, Wernstedy and Mazurek, *Summary of Findings*, RFF, p. 1)

"Institutional controls have more problems than just risk miscalculation. Breeches in the site because of future construction, or even animals may cause the control to fail. The lack of a required contingency plan, would not account for new remedies, new information, or failed institutional controls negatively impacts the effectiveness of the treatment. Institutional memory loss was well is an important factor. This memory loss occurs when a party decides to breach the original institutional control without its own knowledge. In fact, in the ICMA (International City/County Management Association) study, the majority of respondents (63%) said that breaches in the institutional controls on a site were highly or somewhat likely. Following up on that question, 30% of the respondents reported that no formal inspection schedule was set up to

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

evaluate the site as require by law." (Erwin Tam, Environmental Science and Economics, UC Berkeley, "Analysis of Institutional Controls at California Superfund Sites.")

"Concern has been expressed about the long-term viability of institutional controls as a remediation tool. For example, they may be forgotten; enforcement agencies may not effectively review properties or land users' actions; or land users simply may take their chances. Decision makers should weigh the full costs of such options, including capital costs, costs of long-term sampling and analysis, and costs of replacing equipment, as well as concerns about potential long-term risks associated with contaminants left in place, against the cost options that would remove the contaminants completely. Many local governments do not yet have the capacity and resources necessary to meet the challenges of long-term stewardship." ("Understanding the Role of Institutional Controls at Brownfields Sites: Major Concepts and Issues.")

Because institutional controls leave large amounts of contaminants in place, institutional controls will have to be perpetual. Who is to say what anticipated land uses come up for an institutionally controlled area? For example, fifty years after the record of decision for Butte Priority Soils is implemented, the contaminants will still be there threatening human health and the environment, but will the will be there to restrict land uses in order to prevent the release of contaminants.

"Institutional controls 'work' only if they are complied with. And while this is true of any site remedy, institutional controls require monitoring and enforcement over long time periods." ("Linking Land Use and Superfund Cleanups: Unchartered Territory, Probst, et al., Resources for the Future Center for Risk Management.) Will the will to enforce institutional controls exist fifty to a hundred years in the future?

Legal, social and political pressures limit the effectiveness of institutional controls. (*Ibid.*)

The long-term effectiveness of institutional controls is unknown. "There has, however, been little investigation of what happens at sites on the National Priorities List (NPL) when land use plays a prominent role in the remedy selection process. There also has been little analysis of what institutions are involved in making land use decisions and maintaining land use restrictions over time. It is unclear what legal mechanisms are most effective, what institutions will be responsible for enforcing institutional controls, and who's going to pay for these additional responsibilities. We need to be able to answer these questions if land use-based remedies are to be protective over the long term." (*Ibid.*)

"Planners of long-term disposal systems have long recognized the difficulty of maintaining institutional control over property. . . ." (Jack A. Caldwell and Charles C. Reith, *Principles and Practice of Waste Encapsulation*, 1993, p. 35)

More on the inadequacy of Institutional Controls

Superfund's goal is to clean up hazardous waste sites that pose a threat to human health and the environment. Superfund cleanups should provide a permanent remedy that, in part, reduces the toxicity, mobility, and volume of contaminants. Because Superfund has a strong preference for treatment, the use of institutional controls should normally not be a substitute for "more active measures (e.g. treatment and/or containment of source materials) as the sole remedy. . . ." (40 CFR 300.430(a)(1)(iii)(D). OSWER Directive 9355.0-69, EPA 540-R-97-013 makes essentially this same point that the use of institutional controls should be a remedy of last resort.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

To the extent that contamination at a site is really cleaned up, the necessity for institutional controls is minimized. To the extent that institutional controls are used at a site to put waste off-limits, the extent of contamination cleanup is minimized. It is important to remember that the impetus for Superfund in the first place was a failure of institutional controls to prevent the contamination problems and resultant health effects at Love Canal where the institutional controls were not followed. Risk is a function of both toxicity of the materials on site and the degree of exposure to the hazardous waste. (*Effects of Future Land Use Assumptions on Environmental Restoration Decision Making*, DOE, Office of Environmental Policy and Assistance, RCRA/CERCLA Information Brief, DOE/EH-413/9810, July 1998, p.1) Institutional controls depend on limiting exposure to toxic materials and do nothing to lessen the toxicity of these materials. After institutional controls are implemented, the toxic materials that originally triggered the Superfund cleanup are still on site to threaten human health and the environment.

Superfund should be concerned about treating hazardous wastes so that they are no longer toxic and, if treatment of the waste is technically impossible, removing the hazardous waste to a repository where the waste will no longer threaten human health and the environment. "Our obligation is to free subsequent generations of the responsibility for caretaking our hazardous residues, not to saddle them with housekeeping chores which, if neglected, will result in the re-pollution of the environment that we worked so hard to clean." (Jack A. Caldwell and Charles C. Reith, *Principles and Practice of Waste Encapsulation*. Boca Raton: Lewis Publishing Co., 1993, p. 35.) Wastes that are institutionally controlled are still a permanent threat to human health and the environment.

The cleaner a site is after remediation, the greater the potential land uses for that site. The more contamination left after remediation, the less the potential land uses are for the site. "Citizens have pushed for the highest cleanup standards, arguing that an unrestricted use would allow a wider range of future development at the site." (Wernstedt, et. al., *Basing Superfund Cleanups on Future Land Uses: Promising Remedy or Dubious Nostrum?*, Resources for the Future, Discussion Paper 98-03, October 1997, p. 17) The institutional controls being considered in the EPA's RI/FS for Butte Priority Soils would seriously limit productive land uses and greatly compromise the property rights of owners. The extensive reliance on institutional controls is also contrary to the Superfund mandate of preference for treatment and cleanup over institutional controls that restrict land use in perpetuity. If the goal is to encourage productive land uses after Superfund cleanup, a clean site affords the most encouragement. If the goal is to protect human health and the environment, these toxic materials must be treated and/or removed.

The thesis of my comments is that the use of institutional controls for the Butte Priority Soils Operable Unit should be minimal. Instead of extensive use of institutional controls to deal with the BPSOU contaminants, the toxics in Butte Priority Soils should either be treated on site or, if that is not feasible, be removed to a safe repository and treated there using appropriate innovative technologies.

The reasons for this conclusion are:

Institutional controls do not meet the Superfund mandate of really cleaning up a site. To clean up means to make free of contamination.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Institutional controls are not permanent remedies. Rather, institutional controls permanently leave pollutants in place.
Institutional controls do nothing to reduce the toxicity of the hazardous materials. Lead, arsenic, mercury, and cadmium don't naturally attenuate over time, but keep their toxicity indefinitely.
Institutional controls are designed, implemented and monitored poorly.
Institutional controls have inherent enforcement problems.
Institutional controls have severe legal problems that work against effective reduction of the threats to human health and the environment posed by toxic materials.
Institutional controls are ineffective.
Institutional controls for a Superfund site are usually the result of a defective process that limits public participation and which leads to a haphazard development of institutional controls for a particular site.
Institutional controls are poorly understood and poorly defined.

Institutional Controls are not Effective

A. The EPA itself has found significant problems with the effectiveness of institutional controls. For example, in an article entitled "EPA, Think Tank Studies Show Superfund Land-use Controls Flawed, December 10, 2001" which summarizes "Superfund Report via Inside EPA.com" by Resources for the Future, we find the following conclusions:

1. Institutional Controls are not reliably implemented. The EPA study found that over half of the institutional controls implemented under EPA issued records of decision are mischaracterized and that half of the institutional controls were not implemented according to EPA plans.
2. Institutional Controls are dramatically underfunded.
3. Monitoring of institutional controls is poor. Another study of California Superfund sites entitled: "Analysis of Institutional Controls at California Superfund Sites" by Erwin Tam of the University of California—Berkley found that 30% of the sites had no inspection schedule as required by law and in 63% of the cases it was felt that compromise of the institutionally controlled site was likely.
4. Enforcement of institutional controls is poor.
5. ROD's tend to have "vague or inconsistent references" to institutional controls.

In a study done by English, et. al. of the University of Tennessee entitled *Institutional Controls at Superfund Sites*, (July 1997. Hereinafter cited as *Institutional Controls at Superfund Sites*.), which was funded in part by EPA; the EPA's remedial project managers admit the above listed problems (1-5) with institutional controls. The report concludes: "Perhaps most importantly, the results of this study point to a fairly strong sense of unease on the part of some RPMs with the efficacy of institutional controls. This finding is consistent with discussions in the literature on the efficacy of institutional controls." (p.67) No wonder noted engineers Jack A Caldwell and Charles C. Reith stated in their book *Principles and Practice of Waste Encapsulation*, that "Planners of long-term disposal systems have long recognized the difficulty of maintaining institutional control over property. . . ." (p. 35)

B. "To the extent that responsibility for selecting and maintaining the long-term effectiveness of the remedy will become contingent on the intent and actions of a more diffuse set of

institutions—local government, private property laws, current and future property owners, land recordation offices, the courts—the ultimate effectiveness of a remedy to protect human health and the environment will become increasingly difficult to assess." (Hersh, et. al., *Linking Land Use and Superfund Cleanups: Uncharted Territory*, Center for Risk Management, 1997, p.49. Hereinafter cited as: *Linking Land Use*.) If institutional controls become a prime remedy for the Butte Priority Soils Operable Unit, the community will have to live with these controls, effective or not, in perpetuity.

C. The success of institutional controls will depend on changing the way people behave which is very difficult.
Managing human behavior is an extraordinarily difficult task. None of the institutional controls in use, or under consideration for future use, is foolproof. None can reduce to zero the risk of human or environmental exposure to hazardous substances left in place at a site. Nor is there a universal, all-purpose institutional control appropriate for all sites. (Environmental Law Institute, *Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge*, 1999, p. 13. Hereinafter cited as *Protecting Public Health*.)
The risk of human exposure is considerably less if the toxics are treated to make them non-toxic or if they are removed to a repository where the public cannot come in contact with them.

D. The relationship between land use and toxic exposure is not well understood and can have a great deal of variation.

Institutional Controls have Inherent Limitations

A. Institutional controls do nothing to reduce the toxicity or volume of contaminants. Institutional controls, per se, are not that effective in reducing mobility of toxics off-site. To be protective of human health and the environment, institutional controls would have to last as long as the toxics last. "Substances such as lead, mercury, arsenic, and cadmium will not degrade at all and will remain potentially hazardous unless removed or treated. In order to effectively protect against exposure to such long-lived risks, institutional controls would need to last essentially for as long as humans are expected to live on the planet."
(*Protecting Public Health*, p. 13.) No institutional control has this needed level of permanence. If institutional controls are used instead of removal and/or treatment, these controls will have to work in perpetuity. Remember, toxic heavy metals such as those found at the BPSOU do not lose their toxicity over time. Yet, institutional controls are predicated on the designated land use of a sight existing in perpetuity—a flawed assumption. Land use changes are the most frequent changes in a locality.

B. Institutional controls also increase the likelihood that people will unknowingly be exposed to hazardous materials. Leaving contamination on site will always pose a threat of exposure if the institutional control fails. Predicting the long-term efficacy of an institutional control system is very problematic.

C. As we saw with regard to lead exposure, very often, as time passes, it is determined that the contamination in place is more dangerous to human health and/or the environment than originally thought. In such a situation, the in-place institutional controls may not be sufficiently

protective of human health and the environment. "Questions then arise about who should be responsible for additional controls or remediation, and about whether residual contaminants should be allowed only if their risks and methods of containment are well understood." (*Institutional Controls at Superfund Sites*, p. 36.) It is critical that we get the most protective remedy the first time around.

D. Since the implementation of institutional controls depends on people, human error or neglect is a constant problem. After a remedy is selected, the degree of interest in the implementation of the remedy does not match the degree of interest shown during the remedy selection process. "Residual hazardous substances are a classic example of a problem that is not readily apparent, and the tasks associated with implementing institutional controls are unlikely to be the focus of widespread public attention in many cases. Thus, decision makers should plan for a relatively high probability that the person charged with the responsibility to implement an institutional control will fail to do so because that task is not a high priority for that person or because it is a task without a specific deadline and can therefore be postponed indefinitely." (*Protecting Public Health*, p. 103) The efficacy of an institutional control depends on human judgment and "the judgment of any individual may be questionable in a specific situation and a poor judgment about implementing institutional controls could cause people to be exposed to hazardous substances." (*Protecting Public Health,* p. 105)

The Meaning and Understanding of Institutional Controls is Problematic.

A. What are the institutions that will be charged with controlling the toxics? How will these institutions coordinate their activities? Who will devise these institutional controls? Who will have enforcement responsibility? How will these controls be enforced?
What is meant by controls? To what extent will the nature of these controls be the result of political processes rather then good protective environmental and scientific technology? Who will monitor the institutional controls? How often will the controls be monitored? How will they be monitored? All of these questions must be satisfactorily answered before the public can have any confidence in the protectiveness of the controls. Yet, in far too many cases where EPA has extensively utilized institutional controls, these questions have never been answered. Nor is there any consensus as to how they should be answered.

B. "When we admit societal values, power, political leverage, and notions of rights and duties into the picture, it becomes difficult to see 'controls' as anything but contested, and hence problematic. For institutional controls are not stagnant features of a remedy but are made and unmade in the course of experience by regulatory statutes, by the acuity of government oversight, by negotiations at planning board meetings, by the attitudes of bankers, developers, and others involved in real estate, by the limitations of scientific understanding of the health risks posed by toxic chemicals, by the vast and evolving corpus of real property law, by public trust in government or the lack thereof, and, in a broader sense by the constellation of rights and responsibilities that inform a societal ethic." (*Linking Land Use*, p. 52. See also: T. Beatley, *Ethical Land Use: Principles of Policy and Planning* (Baltimore, MD: Johns Hopkins Press, 1994 and R. Platt, *Land Use and Society: Geography, Law and Public Policy* (Washington, D.C.: Island Press, 1996)

Even if there were some agreement on the nature and role of institutional controls, that agreement would be fleeting.

The Effectiveness of Institutional Controls is Compromised by a Dependency on Local Government.

A. It is impossible for local government to predict future land uses. Most land use planning is done in a very piecemeal, incremental fashion. One of the great faults of incremental decision-making is its inability to predict accurately or to plan for possible future events that differ from the present.

B. Often the development of institutional controls occurs after the record of decision has been determined. This later development limits public participation and limits local government input into the design and implementation of institutional controls. If institutional controls are imposed on local government after secret consent decree negotiations, local governments may well see no compelling reason to be pro-active in enforcing or monitoring these controls.

C. Often the development of specific institutional controls is more of a political process rather than a technical or scientific process. The essence of the political process is compromise which compromises may not be protective of human health and the environment. "When institutional controls are used to assure protection of human health and the environment, the technical adequacy of the remedy becomes dependent on a number of non-technical factors over which EPA has little influence. These include: the efficacy of local government administration; the consistent application of zoning ordinances; the ability of private property restrictions (such as easements and restrictive covenants) to bind both current and successive users of the sites; and prompt enforcement." (*Linking Land Use*, p. 7.) Land use planning on the local level is often not systematic but results from the compromises that are endemic to the political process. Often land use planning decisions represent the interests of developers, bankers, real estate agents, and etc. rather than the interests of the general public.

D. The lack of consistency in developing and applying land use controls on the local level means that institutional controls are not very dependable or reliable. "In no area of American law are there such frequent requests for amendments to the law (rezoning requests) or minor revisions to the law under the guise of an administrative actions (variance, special exemptions, and so forth." (*Linking Land Use,* p. 61) In fact changing zoning is the most common form of land use action which local government takes. (*Ibid*., p. 62) E.D. Kelly in "Zoning" states this process is inherently "unpredictable and unfair." (Found in *The Practice of Local Government Planning*, 2nd ed., ed. F.S. So and J. Getzels (Washington, D.C.: ICMA Training Institute, 1988) Variances are also frequently given. B. Collingsworth in *The Political Culture of Planning* notes: "Various studies have convincingly shown that boards of adjustment (or appeal) commonly operate according to their own sense of what is right, with little regard to the law, or even their local planning department." (New York: Routledge, 1993, p. 7) English, *et. al.* conclude in *Institutional Controls at Superfund Sites* that: "local governments can repeal or modify any

ordinance that they create. In no other area of American law are there such frequent requests for amendments to the law, and decisions about land use have been among the most controversial and contested issues in many communities. Furthermore, some zoning ordinances place few locational constraints on residential construction, and, especially if a local government does not agree with the proposed Superfund remedy, it may be unwilling to cooperate by amending its zoning ordinance." (Energy, Environment, and Resources Center, University of Tennessee, July 1997. Hereinafter cited as: *Institutional Controls at Superfund Sites*.) For example, most restraints on local governments ability to change zoning regulations are procedural not substantive.

E. Local governments also face serious problems regarding the long term, permanent application of institutional controls. Enforcement of institutional controls by local government has been called "the weakest link of the chain." (Claudia Kerbawy, telephone interview with Robert Hersh, November 1995. Kerbawy is Chief of 307, Environmental Response Division, Michigan Department of Environmental Quality, Lansing, Michigan quoted in *Linking Land Use*, p. 65.) E.D. Kelly in *Enforcing Land Use Controls* calls local enforcement and monitoring of institutional controls "a planner's paradise but an enforcement nightmare." (Planning Advisory Service, Report Number 409 [Chicago: American Planning Association, 1988], p. 4)

F. The effective use of institutional controls demands coordination between and among several levels of government—a difficult, if not impossible, task. Several government agencies may be charged with selecting and implementing the institutional controls. The lack of coordination and cooperation between these agencies can doom institutional controls to failure. So often in the past, institutional controls have been selected on the federal level and the local government has been charged with implementation. Yet, often the local government does not have the authority, funding, interest in or commitment to the institutional controls imposed on it. Coordination and commitment problems can mean that the institutional controls will not be implemented as planned and will not be effective. "The entities responsible for implementation and operation of institutional controls must support the controls selected and have the authority, resources and commitment to enforce them. Because institutional controls may be essentially an unfunded mandate and can conflict with other interests of a locality or state, such as economic development, local acceptance is particularly important." (*Protecting Public Health*, p. 98)

G. The often-poor record keeping of the land use conditions that have been imposed on a Superfund site also compromise enforcement. Even conscientious developers may not be able to ascertain what restrictions have been placed on a piece of property they wish to develop.

H. Problems with local funding also limit the enforcement of institutional controls. "The long term efficacy of institutional controls must be based on regular monitoring, PRP or site owner compliance, and prompt enforcement; yet funding for environmental monitoring and enforcement at the local level has been reduced, and noncompliance with property-based restrictions can be difficult to detect. With deep funding cuts for environment enforcement activities at both the federal and state levels, there is a strong possibility that noncompliance with institutional controls will go unnoticed. Institutional controls work only if they are complied with. While this is true of any site remedy, institutional controls require monitoring and enforcement over long time periods and are thus more problematic. If we define a right to exist

only when there is a system to protect the holder of the right from action or claims of another, to what extent should we see the increased use of institutional controls as a process that reduces the rights of nearby residents or workers on remediated sites while privileging those of past polluters? " (*Linking Land Use*, p. 68)

I. Local and state governments experience great turnover of staff. Institutional knowledge about the institutional controls is lost when there is a constant turnover of knowledgeable personnel.

Legal Issues Limit the Effectiveness of Institutional Controls

A. Another problem complicating the use of institutional controls are the courts. The courts can potentially play a significant role on land use decisions and land use decisions can be very litigious.

> "Although the courts try not to make substantive zoning decisions, judicial attacks on local land use regulations are well documented in case law and in the planning literature and constitute yet another source of uncertainty to the effective working of institutional controls at Superfund sites. In view of the wide variation in the decisions of state and appellate courts concerning the limits of police power to regulate land use and the need for Constitutional protection for the individual, it is easy to envisage the possibility that an owner of a site that is encumbered with a use restriction may challenge and successfully invalidate an institutional control, such as a zoning restriction, on the grounds that the restriction will cause a severe burden and, as such, constitutes a taking of private property by the government." (*Linking Land Use*, p. 64)

B. The NCP does not clearly specify the legal authority for institutional controls. Because there are no detailed statutory specifications of institutional controls, institutional controls are often left to the end of the remedy selection process where public input is minimal. Leaving them to the end is problematic in that: "If you leave institutional controls to the last and you can't get them implemented, then you're stuck. You're at a dead end rather than the destination of the record of decision (ROD)." (Claudia Kerbawy, *op.cit.*, p. 53)

C. On a practical level, it is unclear who should monitor and enforce the institutional controls. RODs usually have little specificity regarding the implementation and monitoring of institutional controls. Often the specification of the nature and types of institutional controls is very general. Questions abound regarding what kind of monitoring will be performed, who will perform the monitoring, how and what type of enforcement will occur, what will be the frequency of the monitoring, and who is responsible for maintaining the protectiveness of the institutional control arrangements. The technical remedy is determined first and then institutional controls are developed to protect the remedy. Yet, it is often difficult to get acceptance by property owners or PRPs after the ROD is issued

D. Given that issues related to institutional land use/property control are not based in federal law but are based in state property laws or the local police power, federal control of institutional

controls on the local level is very limited. CERCLA provides EPA with oversight authority over institutional controls that are part of the ROD remedy but CERCLA provides no mechanisms to enforce that control. Every five years, EPA can amend a remedy when contaminants are left in place, but during that five-year period the supervision of institutional controls is with the local government. Much to compromise a remedy can happen in five years. Moreover, there are serious proposals in Congress to remove the five-year review process. Hence, federal supervision of institutional controls is very problematic and could disappear altogether.

E. It is very problematic whether an institutional control on a current owner of a particular property would bind subsequent owners of that property. "Can third parties (for example, community groups or the local government) enforce a restriction at a site if the property owner fails to comply with the control and the holder of the easement, for example, (EPA, a PRP, the state government, or a local government if signatory to the agreement) fails to act properly? (*Linking Land Use*, p. 57) In *Environmental Regulation of Real Property*, N. Robinson comments that institutional control covenants are very complicated and that "they often defeat the attempts of parties to write covenants which will be enforceable against successors." (pp. 6-16) For example, the form of future property ownership must be similar to the existing type of property ownership for an institutional control restriction to continue in force. Once a property is sold to a new owner, monitoring of what the new owner does on the property is diffuse if it exists at all.

What happens in a commercial venture if the purchaser of the property goes bankrupt? Who is responsible for the institutional control restrictions on the property? Who will enforce these restrictions? State laws regulating the use property are Byzantine.

> "The common law tradition of different types of ownership could limit long-term effectiveness of (institutional controls') reliability if they fail to bind third parties to the agreements worked out in the consent decree, and the question of authority—who holds an easement and on what legal basis can the government or some other entity challenge noncompliance with the easement or deed restriction—is, again, open to interpretation. These issues suggest that proprietary controls, negotiated between PRP/site owners and government (federal, state, local) may be insufficient by themselves to effectively ensure the long-term safety of the public from residual contamination. Their reliability hinges on how carefully they are devised, the authority and willingness of the party holding the rights to use them, and the willingness of a property owner to comply." (*Linking Land Use*, p. 58)

F. Multiple owners or multiple use of a site also compromise the ability of government to police institutional controls.

G. The "touch and concern" doctrine can limit the efficacy of real covenants in the institutional control process. "Equitable servitudes" also are limited in their effectiveness by the "touch and concern" requirement.

H. Liability under institutional controls is problematic.

"When institutional controls are created, it is important to determine who will be liable in the event they fail. Even if the EPA has entered into a consent decree

at the time of the initial site remediation releasing PRPs from liability for residual contamination, questions remain about liability if the institutional controls are violated. For example: If the current property owners allow development that violates use restrictions, are they liable, are the original PRPs liable, or both?
If people are harmed by such a violation, would they be able to sue the current property owners, the original PRPs or both?" (*Institutional Controls at Superfund Sites*, p. 34)

I. Another difficulty is that land use controls are "vulnerable to changing legal interpretations about the nature of property rights." (Wernstedt, et. al., *Basing Superfund Cleanups on Future Land Uses: Promising Remedy of Dubious Nostrum?,* Resources for the Future, Discussion Paper 98-03, October 1997, p. 16) For example, if the courts expand the scope of takings decisions to increase the extent to which government regulations are viewed as a "taking" then the efficacy of institutional controls will be diminished.

Summary

Based on the above one can, in summary fashion, conclude:
1. Because the data upon which the remedy was based is incomplete, inadequate or insufficient, additional investigation is mandated.
2. Because the assumptions upon which the remedy is based are unsupported, additional investigation is mandated.
3. Because toxics of concern were not recognized and evaluated in the original remedy selection process, new investigations should be conducted and, if needed, the remedy should be modified to remediate these new toxics of concern.
4. Because there are workability/implementation problems, the remedy must be changed.
5. Because the Community Involvement Program is inadequate, particularly in terms of environmental justice issues, the Community Involvement Program must be modified.
6. Because of inherent problems with Institutional Controls and the degree to which the Priority Soils Remedy's effectiveness depends on Institutional Controls, the implementation of Institutional Controls at the Priority Soils site warrants strict scrutiny.
7. Because of inherent problems associated with caps, the difficulties inherent in the use of capping hazardous waste must be addressed.
8. Because of new data, the Priority Soils Record of Decision must be significantly modified.

The BPSOU Remedy as currently being implemented must be modified in order to:

1. Remediate all attics containing toxic attic dust, both within the BPSOU and in areas adjacent to the BPSOU, regardless of whether or not a so call "pathway of exposure" to the toxic dust exists. If toxic attic dust in present, it should be remediated. The "pathways of exposure" approach to remediating attic dust will assure that the BPSOU remedy as currently being implemented will never be protective of human health and the environment.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

2. Comprehensively examine/assess/remediate all toxics/metals/elements of risk to human health and the environment found within and adjacent to the BPSOU.

3. Correct the health risk assessment omissions and remediation inadequacies listed earlier in this paper.

4. Officially stipulate that the arsenic contamination found in attics within and adjacent to the BPSOU is smelter dust and thus within the remediation purview of the Superfund program.

5. Develop, as part of the Remedy implementation, a comprehensive/effective/innovative community involvement program for the BPSOU that targets, in particular, low-income citizens.

6. Address and resolve the environmental justice issues that are discussed in this paper.

7. Justify the argument that remediating three toxics—arsenic, lead and mercury—will lead, automatically, to the remediation of all toxics present within the BPSOU.

8. Place the burden of initiating remediation on the PRPs and not on citizens.
9. Be proactive in Remediation. The Remedy as currently being implemented places far too much emphasis on voluntary cleanup initiation and compliance by property owners, or renters or occupants. (The primary burden should be on owners.) **Given the inadequate community outreach program articulated in the Plan, this is particularly problematic. While the PRPS for BPSOU need to be primarily responsible for implementing the cleanup of attics, however, the EPA needs to be pro-active also**. For example, private property controls such as deed restrictions, restrictive covenants, or government controls such as notices and advisories of contamination existing on the property, permits and informational devices (for example, notices that would become part of property deeds) could be used. **The EPA has no lack of statutory authority to enforce its cleanup decisions under CERCLA**. In developing these controls, I would reference:
1. "Draft Guidance "Institutional Controls: A Guide to Implementing Monitoring and Enforcing Institutional Controls at Superfund, Brownfields, Federal Facility, UST and RCRA Corrective Action Cleanups" February 19, 2003
2. The Uniform Environmental Covenants Act
3. All of the enforcement tools available to EPA under the general heading of Superfund (CERCLA) law, policies and regulations. EPA has broad authority to regulate private actions in order to protect the public's right to a clean and healthy natural environment. The contaminants found on private property within the BPSOU constitute a threat to the public health and welfare. Certainly, EPA has the legal right to enter into such environmental covenants, controls and enforcement actions in order to protect human health and the environment from contamination now and in the future. If voluntary compliance fails, these, and similar, controls and enforcement actions can and should be used to gain access to contaminated properties in order to remediate them. (Perhaps, what could be done is to have some property owner/resident response level participation target or benchmark level and if that target or benchmark level is not met, mandatory compliance actions will be forthcoming. If participation levels are below benchmark

targets, the EPA could use more aggressive measures. I am all for voluntary compliance as a first start but, if voluntary compliance does not work, more directive measures and procedures are needed. Hopefully, if coupled with a vigorous public outreach campaign, voluntary compliance will be successful.) In any event, the EPA needs to be more aggressive at identifying and remediating homes with attic dust contamination problems. Leaving attic dust in place is leaving a threat to human health in place, contrary to Superfund law. Not only is this contaminated attic dust a direct threat to human health, it also is a threat to the whole BPSOU remedy in that it leaves in place a potential source of recontamination of the BPSOU. In order to ensure a permanently protective remedy, it would seem that preventing attic dust contamination from migrating to other parts of the BPSOU would be required. This can only be done, with any level of assurance, if existing attic contamination is expeditiously remediated regardless of whether or not some "visible" pathway of contamination is observed. EPA must approach this remediation proactively, using the extensive legal rights it possess to compel, if voluntary measures fail, remediation under Superfund. Over reliance on voluntary measures does not guarantee that the threats posed by attic dust contamination will be successfully remediated. Voluntary compliance may be the place to start, but if voluntary compliance is ineffective, more aggressive measures are necessary.

Provide assurances that adequate monies will be available to implement the program.

More on the Parrott Tailings

Precautionary Principle, Pollution Prevention and the Parrott Tailings

Submitted by:
[Resident #6]
Butte, Montana 59701

CERCLA's purpose is to ameliorate or prevent actual or potential threats to human health and the environment emanating from toxic material or hazardous materials. Article II, section 3 of the *Montana Constitution* provides that "All persons are born free and have certain inalienable rights. They include the right to a clean and healthful environment…" and Article IX of the Montana State Constitution holds: "The State and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations." MDEQ's Mission is: "to protect, sustain, and improve a clean and healthful environment to benefit present and future generations."

In interpreting the meaning of Articles II and IX of the Montana Constitution, the Montana State Supreme Court in *Montana Environmental Information Center v. Department of Environmental Quality and Seven-Up Pete Joint Venture* (No. 97-455, 1999 MT 248, 296 Mont. 207, 988 P.2d 1236) found that **Pollution Prevention** and the **Precautionary Principle** were part of the Montana Constitution's guarantee to citizens of a clean and healthy natural environment, i.e. these principles are part of Montana law. The Court found that "the right to a clean and healthful environment is a fundamental right. . . ." In analyzing the discussion and debate at the 1972 Montana Constitutional Convention, the Court determined that it was the clear intent of the participants that the environmental rights guaranteed in Articles II and IX were interrelated and

that these two Articles espoused the principles of pollution prevention and the precautionary principle. For example, the Court cites Delegate McNeil who said in discussing how Articles IX's subsections (1) and (3) were related: "It goes further than that and directs the Legislature to provide remedies to prevent degradation. **This is anticipatory**." (*Emphasis supplied.*) It was also clear during the discussion and debate during the Montana Constitutional Convention that the delegates intended the environmental provisions of the Constitution to mandate an "improvement" of the natural environment. The Court stated: " In doing so, we conclude that the delegates' intention was to provide language and protections which are both anticipatory and preventative. The delegates did not intend to merely prohibit that degree of environmental degradation that can be conclusively linked to ill health or physical endangerment. Our constitution does not require that dead fish float on the surface of our state's rivers and steams before its farsighted environmental protections can be invoked…." The Montana Supreme Court's decision is an unambiguous and binding statement that the **Principles of Pollution Prevention and the Precautionary Principle/Rule** must direct the administration and implementation of **ALL** state laws, rules, and regulations. **These principles are state ARARS that must be applied to the issue of removing the Parrott Tailings.**

Black's Law Dictionary also provides guidance as to the meanings of the concepts articulated in the Montana Supreme Court case above quoted.
Black's defines **potential** as "Existing in possibility but not in act." **Threat** is defined as a "menace." **Imminent** is defined as: "Near at hand; mediate rather than immediate, close rather than touching, perilous." **Substantial** is defined as of "Importance." Certainly, toxics left in place at the Priority Soils site would present a potential threat and a substantial, imminent threat as defined in *Black's Law Dictionary*.

The Pollution Prevention Principle/Standard warrants total removal of the Parrott Tailings as part of the Priority Soils Remedy.

The goal of Montana's pollution prevention program is to "prevent pollution before it occurs. Pollution prevention is the highest step of the waste reduction hierarchy and occurs prior to the other steps of recycling, treatment, or disposal." (MDEQ, *What is Pollution Prevention*?) **See also**: *MCA 2003*, 75-10-601; 75-1-602, 8 (b) (iii) and 75-1-103 (1) and (2) (a)

The Federal Pollution Prevention Act of 1990 established as national policy the mandate that: "Pollution should be prevented or reduced at the source wherever feasible." According to the EPA, pollution prevention means "source reduction" which is defined in the Pollution Prevention Act as any type of action which: "reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment or disposal" and "reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants." Pollution Prevention and the Precautionary Principle are also a part of several other federal laws: CERCLA, Clean Water Act, Toxic Substances Control Act, NEPA, RCRA, EPCRA, and the Clean Air Act. For a more detailed discussion of the role of pollution prevention and the precautionary principle in federal environmental law see: *Advancing Environmental Justice through Pollution Prevention: A Report developed from the National Environmental Justice Advisory Council-A Federal Advisory Committee to the U.S.*

Environmental Protection Agency, June 2003. As this report makes clear, there is an intimate relationship between environmental justice, pollution prevention, and the use of the precautionary principle, all of which are EPA policy mandates.

The point of Montana law and federal law is that it is better to prevent pollution before it harms public health and the environment rather than treat or mitigate the effect of pollutants after they are released. The medical motto: *Primum non nocere* (First, do no harm.) would apply to pollution prevention. Given the serious nature of the pollutants found at the Parrott Tailings site, the pollution prevention principle would warrant the total removal of the Parrott Tailings **now** rather than waiting for these contaminants to be released and then trying to treat them later. Given the serious nature of the pollutants found at the Parrott Tailings site, the pollution prevention principle would warrant removing as much of the contaminants as possible so as not to threaten future generations. Leaving the Parrott Tailings waste-in-place is a serious threat-in-place.

The Precautionary Principle/Standard warrants removing the Parrot Tailings now as part of the Priority Soils remedy.

The essence of the precautionary principle is that government should act before harm to human health and the environment occurs from the releases of toxic substances. The precautionary principle "dictates that indication of harm, rather than proof of harm, should be the trigger for action." (Sandra Steingraber, *Living Down Stream: An Ecologist Looks at Cancer and the Environment*, p. 270.) If there is a reasonable suspicion that harm to human health and the environment could occur from the release of a toxic substance, government should step in and fix the problem before its hurts people and the environment. The 1998 Wingspread Statement on the Precautionary Principle states: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." Former EPA director Christine Todd Whitman stated: "policymakers need to take a precautionary approach to environmental protection. . .. We must acknowledge that uncertainty is inherent in managing natural resources, recognize it is usually easier to prevent environmental damage than to repair it later, and shift the burden of proof away from those advocating protection toward those proposing an action that may be harmful." If there is a strong suspicion that something bad is going to happen, government has an obligation to stop it prior to it's occurring. The precautionary principle is really grounded in old common sense sayings: "An once of prevention is worth a pound of cure." "Better safe than sorry." "A stitch in time saves nine." "Look before you leap."

The President's Council on Sustainable Development supports the precautionary principle. The Council declared: "Even in the face of scientific uncertainty, society should take reasonable actions to avert risks where the potential harm to human health or the environment is thought to be serious or irreparable." The American Public Health Association has passed a similar resolution concerning chemical exposure. (Resolution 9606)

The U.S. Court of Appeals for the District of Columbia Circuit upheld the EPA's use of the precautionary principle in *Ethyl Corp. v. U.S. Environmental Protection Agency* (541 F. 2d 1, 6 ELR 20267 (D.C. Cir.), cert denied, 426 U.S. 941 (1967) This was the case which supported the

banning of leaded gasoline by the EPA. The banning of lead additives to gasoline was an example of the precautionary principle in action. "The U. S. Court of Appeals for the D.C. Circuit upheld the U.S. Environmental Protection Agency's decision to take a precautionary approach and ban lead anyway, even in the absence of scientific evidence adequate to demonstrate exactly what the risks from the lead were or what the benefits of removing it would be. As it turned out, banning leaded gasoline was the single most important contributor to the virtual elimination of lead from air and from most children's blood." (Charnley and Elliott, *Risk Versus Precaution: Environmental Law and Public Health Protection*, Environmental Law Institute, March 2002)

There is ample support for the precautionary principle from international organizations and treaties, to many of which the United States is a signatory. For example, the Rio Declaration from the 1992 United Nations Conference on Environment and Development, also known as Agenda 21, stated: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." The United States signed and ratified the Rio Declaration.
The precautionary principle is also part of the following: Ozone Layer Protocol, Second North Sea Declaration, United Nations Environment Programme, Nordic Council's Conference Declaration of October 18, 1989, PARCOM Recommendation 89/1, Third North Sea Conference, Bergen Declaration on Sustainable Development, Second World Climate Conference, Bamako Convention on Transboundary Hazardous Waste into Africa, OECD Council Recommendation of January 1991, Maastricht Treaty on the European Union, Climate Change Conference, UNCED Text on Ocean Protection, and the Energy Charter Treaty.

The Pollution Prevention Standard and the Precautionary Principle/Standard are <u>ARARS</u> for Parrott Tailings

In effect, the provisions of the Montana Supreme Court decision *Montana Environmental Information Center v. Department of Environmental Quality and Seven-Up Pete Joint Venture* (No. 97-455, 1999 MT 248, 296 Mont. 207, 988 P.2d 1236 as well as the other citations listed above become ARARs which must be met for the Priority Soils Operable Unit. This point is clearly articulated in: *United States v. Akzo Coating of America, Inc.* No. 88-CV-73784-DT (719 F. Supp. 571, 30 ERC 1361) (E.D. Mich. August 9, 1989) ARARs do not have to be numerical standards but can be found in the law of the state. The Akzo court found: "CERCLA envisions a substantial and meaningful role for the individual states in the development and selection of remedial actions to be taken within their jurisdictions. CERCLA also accommodates the environmental standards and requirements of the state in which a site is located." "Congress has not. . .displaced state regulation. . . ." "CERCLA does not expressly preempt sate law. . . ." With specific regard to numerical standards that court found: "Although the state law does not contain specific numerical standards, it is, as the State contends, legally enforceable and of general applicability. The EPA's own publication (EPA, *Superfund Program; Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements; Notice of Guidance,* 52 Fed. Reg 32495, 32498 (Aug. 27, 1987) recognizes that general requirements having no specific

numerical standards to be enforceable ARARs. General State goals that are duly promulgated (such as a non-degradation law) have the same weight as explicit numerical standards. . . ." The Court cites numerous other cases to support it conclusion.

What are ARARS for Purposes of the Parrott Tailings?

According to the *CERCLA/Superfund Orientation Manual* (EPA/542/R-92/005, October 1992), ARARs are defined as "Any standard, requirement, criterion, or limitation under a State environmental or facility-siting law. . . ." Certainly, a decision of the Montana State Supreme Court, given the doctrine of judicial review, would qualify as a requirement, standard, criterion or limitation." This Montana Supreme Court decision is more stringent than any other federal court decision. So given that it is enforceable, has been promulgated and is more stringent than federal case law (See: CERCLA/Superfund Orientation Manual, p. XII-2 and XII-6), this decision is an **ARAR**. "CERCLA, Section 121(d)(2) requires compliance with applicable or relevant and appropriate state requirements when they are more stringent than federal rules and have been 'promulgated' at the state level. To be viewed as promulgated and serve as an ARAR at a Superfund site, a state requirement must be legally enforceable, based on specific enforcement provisions or the state's general legal authority, and must be generally applicable, meaning that it applies to a broader universe than Superfund site." (*RCRA, Superfund and EPCRA Hotline Training Module: Introduction to Applicable or Relevant and Appropriate Requirements*, (EPA540-R-020, OSWER9205.5-10A, June 1998, p. 19) Clearly the Precautionary Principal and the Principle of Pollution Prevention, as mandated by the Montana Supreme Court Decision *Montana Environmental Information Center v. Department of Environmental Quality and Seven-Up Pete Joint Venture* (No. 97-455, 1999 MT 248, 296 Mont. 207, 988 P.2d 1236), as well as Montana state environmental policy as articulated in the MCA, are clearly ARARs for the Priority Soils site which must be applied to the Parrott Tailings. As we know, CERCLA does not contain its own cleanup standards but relies heavily on state ARARs. "Regulation codified in the NCP govern the identification of ARARs and require compliance with ARARs throughout the Superfund response process, including. . .removal actions." (*RCRA, Superfund and EPCRA Hotline Training Module: Introduction to Applicable or Relevant and Appropriate Requirements*, (EPA540-R-020, OSWER9205.5-10A, June 1998, p. 1) Of course, as previously cited, ARARs do not have to be numerical or quantitative.

The point is that both Court precedents as well as EPA policy mandate the use of the precautionary principle as it applies to the Parrott Tailings. The Precautionary Principle/Standard and the Principle/Standard of Pollution Prevention, as mandated by the Montana Supreme Court decision *Montana Environmental Information Center v. Department of Environmental Quality and Seven-Up Pete Joint Venture* (No. 97-455, 1999 MT 248, 296 Mont. 207, 988 P.2d 1236) are in effect ARARS for the Parrott Tailings.

There is ample proof that the contaminants found at the Parrott Tailings area pose a threat to human health and the environment. The EPA argues that, as a result of their waste-in-place remedy, people will not be exposed to these toxic contaminants. Instead of removing the toxics from the people, EPA wants to remove the people from the toxics. (Given the vagaries of human behavior this approach is problematic at best.) All agree that if exposure to these toxic wastes was present, human health and the environment would be negatively affected. There is no

guarantee that changing patterns of citizen behavior or inherent problems with caps and institutional controls will not in the future expose citizens to these wastes left in place.

The Precautionary Principal and the Principal of Pollution Prevention, which are both part of Montana law and federal law and which are, in effect, ARARs, demand that the waste-in-place remedy be rejected in favor of the maximum removal of contaminants at the Parrott Tailings. Leaving waste in place really is leaving an unacceptable and unwarranted threat in place.

5/18/2015 Additional comments received from Resident #6

I would like to submit the following as part of my input into the Five Year Review Process currently being conducted.
I also would, apart from the Five Year Review Process, ask EPA and MDEQ to consider and implement my requests, which are compatible with existing remediation mandates:
[Resident #6]

Stormwater Runoff—A Modest Proposal

As a result of stormwater runoff, water quality standards are exceeded during Butte's frequent rain or snow melt, i.e. stormwater, events. While EPA is enamored with its so called "iterative" approach to controlling stormwater runoff, water quality standards will never be met unless the following is done:

1. **At least two new retention basins for collecting stormwater runoff need to be constructed and maintained**. I believe one is already mentioned in the UAO for the base of Buffalo Gulch. Other sites could be found along historic Silver Bow Creek aka Metro Storm Drain. Even if all other envisioned stormwater runoff control measures were put in place, infiltration problems from buried waste in soil/ground water would still produce stormwater runoff pollution problems. For some reason, the Montana Office of EPA is unreasonably opposed to constructing additional retention/collection basins. Retention/collection basins are a relatively cheap and effective means of controlling stormwater runoff. Without additional retention/collection basins water quality standards will never be permanently achieved in Silver Bow Creek.

2. **Butte Silver Bow local government needs to do a much more effective job of implementing mandated stormwater runoff controls.** Butte Silver Bow is EPA's "agent" for administering and implementing stormwater runoff controls. For some unknown reason, the Montana Office of EPA is lackadaisical in insisting that Butte Silver Bow implement mandated stormwater runoff controls. This must stop. If Butte Silver Bow needs additional funds to implement stormwater runoff controls, they should be provided. Many problem properties are owned by Butte Silver Bow. Problem properties are known to Butte Silver Bow. All that is lacking is the will to enforce the existing controls.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

3. **EPA needs to get serious and fund a concerted community outreach program to educate the public about stormwater runoff problems and what citizens and landowners can do to mitigate the problem.** The Montana Office of EPA talks community involvement but doesn't back it up. For example, at EPA's request, CTEC (Citizens Technical Environmental Committee—EPA TAG Group) prepared and was going to implement a comprehensive public education program regarding stormwater runoff. Before this program could be implemented, EPA cut CTEC's funds to the point where CTEC had to abandon its planned stormwater public education program. EPA needs to get serious about funding a comprehensive public education program/campaign regarding stormwater runoff. EPA also needs to get serious about environmental justice outreach as part of any community involvement/education program regarding stormwater runoff.

4. **The Montana Office of EPA needs to provide regular updates as to progress on stormwater runoff controls.**

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Additional comments were received via email on May 22, 2015 from Resident #6

Since it is unclear to me when is the ending period for public comment, I would like to submit the following. I submit to Region 8 and national because, lately, public input is ignored by the Montana Office of EPA.

Parrott Tailings
There should be a **ROD Amendment** to the effect that the Parrott Tailings will be removed.
Reasons:
1. The model upon which EPA based its original decision has been found to be totally in error.
2. Natural attenuation, rejuvenation and remediation will occur after the Tailings have been removed.
3. This natural attenuation, rejuvenation and remediation will occur at a rate much faster than predicted by EPA as demonstrated at other sites in Butte and at other sites throughout the country.
4. Removing the Tailings would be more congruent with Superfund's stated goal of permanent cleanup that emphasizes the reduction in the mobility, volume and toxicity of contaminants.
5. EPA needs to cease clinging to a remedy based on faulty information, a faulty model and faulty assumptions. New information has come to light that questions the protectiveness of the existing remedy.

Berkeley Pit
1. Scaling needs to be seriously considered, evaluated and a plan put in place to deal with scaling. Scaling occurred at Durant Canyon as a result of remediation efforts. There is no reason to believe that scaling will not occur in Butte when vast quantities of lime treated water are released into Silver Bow Creek. Yet, EPA ignores this threat. Scaling is a direct threat to the protectiveness of the existing remedy.
2. The Pit plan is based on an untested and untried model. Little room for error exists. EPA needs to thoroughly test its model now.

Environmental Justice
The pursuit of environmental justice is supposed to permeate all of EPA's activities. Yet, promoting environmental justice is absent from the Superfund remediation efforts in Butte.
The EPA has conducted no special outreach to low income communities in Butte. No special effort, as mandated by EPA environmental justice policy, has been made to include environmental justice communities in Butte. Environmental justice communities in Butte have been ignored by the Montana Office of EPA. EPA needs to develop a specific, targeted environmental justice community involvement plan for Butte.

Stormwater Runoff
The bottom line is that the current remediation approach EPA is using is not working. Water quality standards are **not being met** during stormwater events.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Stormwater controls are not being enforced by the EPA's agent Butte/Silver Bow local government. In June 2011, the Five Year Review stated: "Storm water continues to be a significant source of contaminant loading to Silver Bow Creek during runoff events." The same statement will probably be made or at least should be made in the current Five Year Review. Such statements will continue to be made until the EPA gets serious about enforcing stormwater runoff controls. The EPA's iterative approach involves simply reiterating this lack of compliance.

Caps and Institutional Controls

These have not worked to provide permanent protection of residents. Caps are regularly compromised and institutional controls are haphazardly enforced. As long as waste is left in place the threat from this waste is left in place. EPA has not even adequately categorized all of the waste sites in Butte, even at this late date in the cleanup process.

The above is a summary of the arguments I have made in other, more lengthy submissions. I supply these at the relative end of the comment process because I don't want my earlier comments to somehow be lost. I expect, as a citizen, that even though this is what the Montana Office of EPA calls a cursory Five Year Review,that my comments will be afforded serious consideration and receive a detailed, specific response.

[Resident #6]

Additional comments were received via email on May 25, 2015 from Resident #6

Please accept the following as additional comment to be considered during the current Five Year Review of Butte Area Superfund sites.
These documents raise issues pertinent to consideration of the question as to whether or not the current remedy is protective of human health and and the environment and as to whether or not the current remedy is functioning as intended. These documents also raise questions as to whether or not new information that calls into question the efficacy of the remedy has been considered. These documents raise issues that need to be addressed during the Five Year Review Process. If these issues are not addressed, there is no way of knowing whether or not the remedy is protective and working so as to protect human health and the environment.

[Resident #6]

Priority Soils Health Risk Assessments Violate Environmental Justice

Submitted by:
[Resident #6]
Butte, Montana 59701

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Environmental justice's goal is that low-income citizens should be equally protected from environmental pollution. Low-income citizens should not have to bear a disparate toxic burden. Environmental justice's goal is not that all should be equally polluted. Environmental law should equally protect **all. Environmental justice becomes an issue when low-income and minority citizens are disparately impacted by the enforcement of environmental laws, rules and regulations and when low-income citizens and minorities experience a disproportionate distribution of environmental hazards and risks of exposure and illness. Environmental justice is intrinsically related to the equal protection of the law.**

Summary of the EPA Policy Mandate on Environmental Justice

On February 11, 1994, through Executive Order 12898, President Clinton declared that: "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States." According to the EPA, the President's concern was that: "minority and low-income populations bear a disproportionate amount of adverse health and environmental effects." Today, the EPA further defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, ***implementation, and enforcement*** of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal and commercial operations ***or the execution of federal, state, local, and tribal programs and policies***." (Emphasis supplied.) EPA administrator Whitman in August 2001 stated that environmental justice would be an integral part of all EPA programs, policies, and activities. According to Whitman, the goal of the EPA's Environmental Justice program is that no segment of the population, including low-income citizens, suffers disproportionately from the EPA's policies, programs and activities. Furthermore, EPA has a mandate to provide for the equitable distribution of the burden of cleaning up sites. (The Office of Solid Waste and Emergency Response [OSWER] in their *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* mandates that "Environmental Justice issues should be considered at all stages of policy guidance and regulation development, beginning with preliminary efforts" and that environmental justice should be integrated into all agency actions. (OSWER Directive 9200.3-18FS, EPA540/F-95/023)

This above OSWER Directive also mandates that the economic/regulatory impacts of EPA decisions be considered in terms of environmental justice issues. Part of the EPA's environmental justice strategy is to promote a "sustainable economy" in areas affected by EPA rules, policies and programs. For example, OSWER Directive No. 9200.3-17 entitled *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* states: "Where environmental justice concerns or the potential for concerns are identified, staff should conduct an appropriate analysis of the issues(s). To the extent practicable, staff should evaluate the ecological, human health (taking into account subsistence patterns and sensitive populations) and socio-economic impacts of the proposed decision document on minority and low-income communities. Examples include how a policy on future land use would impact minority or low-

income communities versus non-minority, affluent communities. The analysis should be documented and retained for public availability." (**This has not been done by the Montana Office of EPA for Priority Soils**.) The point is that the Montana Office of EPA has a mandate to consider how its enforcement actions will disproportionately and adversely economically affect low-income areas and has a mandate to mitigate disproportionate adverse economic impacts on low-income citizens. (See: *Incorporating Environmental Justice Principles into the CERCLA Process*, May 1998.) Low-income citizens should not bear a disproportionate or undue regulatory burden when it comes to the development of cleanup activities. (EPA, Region 8, *Environmental Justice Action Plan*, April 2003)

The **Region 8 of EPA** also equates environmental justice with the legal concept of equal protection under the law. In April of 2003, Region 8 issued its *Environmental Justice Action Plan* which mandates that the agency will work with stakeholders to "correct and prevent inequitable environmental and public health impacts to any groups." In short, environmental justice mandates a particular concern with populations, such as low-income populations, that bear a disproportionate burden of environmental degradation and environmental regulations. "Fair treatment means that no group of people, including a racial, ethnic, or social economic group should bear a disproportionate share of the negative . . .consequences resulting from . . .the execution of federal, state, local and tribal programs and policies." (Headquarters Press Release, EPA, *Administrator Whitman Reaffirms Commitment to Environmental Justice*, August 21, 2003)

Complaint Contention:

The Health Risk Assessments actually conducted for the Butte Priority Soils Superfund site violate the EPA mandate to promote environmental justice. These distorted Health Risk Assessments, conducted at the Butte Priority Soils Superfund Site, preclude the possibility that low-income citizens at the Butte Priority Soils Site will receive equal protection from the harms of pollution as a result of the Superfund cleanup of that Site. The Health Risk Assessments conducted at the Butte Priority Soils Site will lead to a remedy that will not rectify the disparate toxics burden that the poor living in the Priority Soils area endure. In fact, the Health Risk Assessments conducted for the Butte Priority Soils Superfund site actually increase the disparate toxic burden of low-income citizens who live within the Priority Soils OU.

Summary of Complaint Argument:

1. The EPA has a policy mandate to promote environmental justice in **all** of its activities. (Documented above.)
2. There are a disproportionate number of low-income citizens living within the Butte Priority Soils Site. The Butte Priority Soils Superfund site and its residents of low-income are clearly within the purview and scope of the EPA's environmental justice mandate.
3. These low-income citizens within the Priority Soils area are disproportionately exposed to more hazardous waste materials that are the result of past mining activities.
4. The health risks for low-income residents of the Butte Priority Soils site were assessed using a standard EPA health risk assessment process.
5. The resultant Health Risk Assessments evaluation of the degree and severity of health risks for low-income residents of the Butte Priority Soils site was the basis for EPA's

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

determination of the acceptable level of risk for low-income citizens and the fundamental grounding and justification for the EPA's Proposed Plan and Preferred Alternative for Priority Soils.

6. Health Risk Assessment is inherently biased against the poor.
7. The Health Risk Assessment process for and as **actually applied** at the Butte Priority Soils OU failed to account for the disproportionate health risks borne by the low-income citizens who live within the Priority Soils site.
8. The results of and use of the Health Risk Assessments conducted for the Priority Soils Operable Unit, as the fundamental grounding and justification for the EPA's Proposed Plan and Preferred Alternative for Priority Soils, will actually **increase and exacerbate** the disparate toxic burden of low-income citizens who live within the Priority Soils OU.
9. Therefore, given that the Proposed Plan and the Preferred Alternative for Butte Priority Soils are based on and justified by a Butte Priority Soils Risk Assessment process that **actually and really** discriminated against low-income residents living in the Priority Soils OU, the Proposed Plan and Preferred Alternative for Priority Soils OU are based on a process that violated environmental justice and the EPA mandate to promote and foster environmental justice.
10. Therefore, the outcome of that process, i.e. the Priority Soils Proposed Plan and Preferred Remedy violate the EPA mandate to promote environmental justice. Not only do the Proposed Plan and Preferred Remedy not promote environmental justice, they would increase the discriminatory toxic burden of low-income citizens living within the Priority Soils site.
11. Therefore, because of 9 and 10 above, the Proposed Plan and Preferred Remedy for Priority Soils should be declared null and void.

Substantiation of My Complaint:

I. There are a Disproportionate Number of Low-income Citizens Living within the Butte Priority Soils Site.

According to the 2000 Census, 10.7% of Butte families live in poverty, compared to 10.5% across the state. About 15% of the Butte population lives below the poverty line. Also, according to the 2000 Census, close to 25% of Butte families with children under the age of five years have incomes below the official poverty line. Fifty-eight percent of the homes without fathers have incomes below the official poverty line. According to the Montana Department of Public Health and Human Services, in 2002, about 2.4% of Butte's citizens were receiving Temporary Assistance for Needy Families compared to the state average of 1.89%. Over 10% of the Butte population was receiving food stamps compared to 7.56% statewide.

II. These Low-income Citizens are Disproportionately Exposed to more Hazardous Waste Materials that are the Result of Past Mining Activities.

Studies also indicated that the vast majority of the poor live in the area encompassed by Butte Priority Soils. For example, of the 1200 houses in Butte that have had a high risk of lead, the vast majority are in the Butte Priority Soils site. Compared to Butte as a whole, the low-income citizens living in the area encompassed by the Butte Priority Soils Operable Unit bear a disproportionate burden of exposure to toxics compared to the rest of the community. Comparing income levels to quantity of toxics present clearly demonstrates that low-income citizens in Butte bear a disproportionate toxics burden. The poor in Butte have a greater risk of cancer from exposure to heavy metals than do the non-poor. The poor in Butte are more threatened by the release of toxic, heavy metals associated with mining than the non-poor. "Exposure to hazardous wastes is highly correlated to . . .economic criteria." (Brian D. Israel, "An Environmental Justice Critique of Risk," *New York University Environmental Law Journal.*) [See: Environmental Defense Fund, *Summary Report: Silver Bow County*, 11/24/03] {Note: The EPA's *Revised Community Involvement Plan for Butte Priority Soils Operable Unit,* November 2003 notes the extent of poverty in Butte but makes no attempt to assure that low-income Butte citizens are represented in a meaningful way or have meaningful opportunities to participate in the decision making processes surrounding Priority Soils. The plan makes no accommodation for eliciting the views of low-income citizens for the Priority Soils area. This is directly contrary to stated EPA community involvement and environmental justice policy.} In general, evidence indicates that low-income citizens "experience relatively lower health status with respect to those health effects that are thought to be causally related to environmental pollutants." (Brian D. Israel, "An Environmental Justice Critique of Risk," *New York University Environmental Law Journal.*) This conclusion of Israel is evidenced in the Butte Priority Soils area where survey data indicates that approximately 70% of low-income residents report health problems that have a causal link to the toxics found at the Priority Soils site. (*Community Needs Assessment 2004 Butte, Montana: Summary Report on the Community Needs Assessment Survey and Focus Groups, Summer 2004* by the Imagine Butte Collaborative.)

III. <u>The Health Risks for Low-income Residents of the Butte Priority Soils Site were Assessed using a Standard EPA Health Risk Assessment Process.</u>

Page 5 and pages 20-26 of the *Proposed Plan for Butte Priority Soils OU of the Silver Bow Creek/Butte Area Superfund Site* articulate and substantiate the above claim that the health risks for low-income residents of the Butte Priority Soils site were assessed using a standard EPA health risk assessment process.

IV. <u>The Resultant Health Risk Assessments Evaluation of the Degree and Severity of Health Risks for Low-income Residents of the Butte Priority Soils Site was the Basis for EPA's Determination of the Acceptable Level of Health Risk for Low-income Citizens and the Fundamental Grounding and Justification for the EPA's Proposed Plan and Preferred Remedy for the Priority Soils OU.</u>

On page 20 of the *Proposed Plan for Priority Soils* we find: "Site risk assessments quantified current and potential human health and environmental risks from chemical contaminants. . . . The results of these assessments provide risk managers and the public with information about health risks. They help determine the need for cleanup, and provide a basis for determining the acceptable levels of contaminants that can remain onsite."

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

V. The Butte Priority Soils Health Risk Assessments were Inherently and Structurally Biased against the Poor.

"To the degree that risk assessment is a requisite element for regulatory action, a risk assessment methodology that obscures risks on the basis of class results in less than adequate environmental and health protection for members of that group." (Brian D. Israel, "An Environmental Justice Critique of Risk," *New York University Environmental Law Journal.*) "The argument that distorted risk assessments preclude the possibility of equal protection from pollution rests on the claim that government regulation must result in similar health status across groups, to the extent that health status is affected by substances that are regulated. This is different than the claim that government efforts must be equal across groups, or that government efforts must result in an equal decrease in pollution across groups. The same government effort may be adequate for one group and inadequate for another." *(Ibid.* p. 2. See also: Vicki Been, "What's Fairness Got To Do With It? Environmental Justice and the Siting of Locally Undesirable Land Uses," 78 *Cornell Law Review*, 1001)

Numerous scientists and legal scholars have argued that, as practiced by the EPA, Health Risk Assessment "is itself causally related to disproportionately inadequate environmental protection." (Israel, *op.cit.*, p. 9) See also: "Symposium on Health Research and Needs to Ensure Environmental Justice: Executive Summary & Proceedings and Recommendations"—*National Institute of Environmental Health Sciences*; Robert Bullard and Beverly Wright, Environmental Justice for All: Community Perspectives on Health and Research Needs, *9 Toxicology and Indus. Health*, 821, 836; Desohn Ferris, "Testimony Before the Subcommittee on Civil and Constitutional Rights of the House Committee on the Judiciary," and Mary H. O'Brien, "Poisoning the Poisoned: Address Before the *National Institute of Environmental Health Sciences and the U.S. EPA.*" All are on file with the *New York University Environmental Law Journal.*)

In short, the Health Risk Assessments actually conducted at Butte Priority Soils inherently and structurally discriminated against low income citizens: **(1) The Butte Priority Soils Health Risk assessments depended on methodologies that intrinsically and inherently precluded equal protection for the poor from pollution [This is true because the same pollution exposure standard may protect the non-poor and not protect the poor. See: Breen, *op.cit.*] and (2) The EPA prides itself on contending the Health Risk Assessment is the least susceptible to income based criteria. (See: U.S. EPA, *Environmental Equity: Reducing Risk for All Communities*, Section 5.0)**

Another reason that the Health Risk Assessments conducted for Butte Priority Soils inherently and intrinsically discriminate against the poor is that the generalizations **used as part of the Risk Assessments** discriminated against the poor. *The EPA itself has admitted this*: **"Demographic categories may be useful markers for identifying population subgroups that**

have some likelihood of experiencing exposures significantly different from the average exposure and, thereby, possibly different health risks for the average population. (EPA, *Environmental Equity: Reducing Risk for All Communities*, Section 5.0)

The Health Risk Assessments conducted the Butte Priority Soils failed to identify *any population subgroups that have some likelihood of experiencing exposure significantly different from the average exposure.* **"Most risk assessments ignore the fact that exposure to toxic chemicals is unequal and rely instead on estimates of 'average' exposure levels." Ann Misch, "Assessing Environmental Health Risks," in *State of the World.*)**

Also, the Health Risk Assessments conducted at Butte Priority Soils failed to consider multiple and indirect toxic exposure pathways and failed to consider indirect sources of potential toxic exposure. (According to the Science Policy Council, the EPA routinely fails to consider multi-pathways and multi-sources in their risk assessments.) Such failure places a discriminatory burden on the poor living disproportionately in the Priority Soils Site who, to a greater extent than the non-poor, are subject to multiple and indirect toxic exposure pathways and indirect sources of potential toxic exposure.

VI. The Health Risk Assessment Process used specifically for Butte Priority Soils Failed to Account for the Disproportionate Health Risks Borne by the Low-income Citizens who Live within the Priority Soils Site.

"There are a number of reasons why risk assessment may methodologically fail to detect health effects in poor communities: (A) failures of risk assessment that disproportionately affect poor and minority communities because these communities are more likely to be exposed to risk; and (B) failures of risk assessment that disproportionately affect poor and minority communities because these communities are more likely to be susceptible to risk." (Israel, *op.cit.* See also: Laura Montgomery and Olivia Carter-Pokras, *Health Status by Social Class and/or Minority Status: Implications for Environmental Equity Research*, 9 *Toxicology & Indus. Health* 729) The point is that inherent and intrinsic informational biases in the Health Risk Assessments actually done for Butte Priority Soils failed to consider the disproportionate and discriminatory effects the heavy metal contamination has on Butte poor. Such biases mean that the Butte poor will receive less than adequate protection from the Preferred Alternative for Priority Soils. Numerous studies show that the poor have poorer health with regard to the negative health effects caused by the toxics found at Butte Priority Soils. (Montgomery and Carter-Pokras, *op.cit.*) Sexton, *et.al.* in "Environmental Justice': The Central Role of Research in Establishing a Credible Scientific Foundation for Informed Decision Making," 9 *Toxicology and Indus. Health* 685, 713 states: "For disparities in environmental health risks to occur by socioeconomic status of ethnicity/race, these demographic variables must be associated with systemic differences in (1) exposure to environmental agents, (2) susceptibility to the effects of environmental agents, or (3) exposures and susceptibilities.")

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Let us consider the above in greater detail in terms, specifically, of the Priority Soils site.

The Risk Assessments conducted at Butte Priority Soils did not consider: (1) Dangers associated with multiple exposures, (2) Dangers associated with mixtures of the toxics, (3) Dangers associated with above-average exposures and (4) Dangers associated with long-term, low-dose exposures. **Israel notes that these types of failures, which are found in the Health Risk Assessments conducted at Butte Priority Soils, particularly hurt the poor because of the failure "to adequately incorporate exposure realities" in low income communities. (*op.cit.*)**

Health Risk Assessment examines the likelihood of whether or not a person exposed to a particular toxic substance will incur a particular illness related to the toxic. Health risk assessment does not consider multiple exposures. (See: William H. Hallenbeck and Kathleen M. Cuningham, *Quantitative Risk Assessment for Environmental and Occupational Health.*) Therefore, although the EPA claims that the Health Risk Assessments for the Butte Hill were conservative in their assumptions, the assumptions were not as conservative as alleged because of the failure to consider multiple exposures. Such a failure is discriminatory to the poor on the Butte Hill in that: "While this distortion is important to the public in general, it is critical to observe that such a bias may have a disproportionate effect in poor communities and communities of color where exposure to multiple substances tends to be higher." (Israel, *op. cit*, p.12) "Any meaningful analysis intended to protect underserved communities will recognize that multiple-cumulative-combination exposures are occurring." (Ferris, *op.cit.*)

Also, because the Health Risk Assessments for Butte Priority Soils failed to consider or evaluate the synergistic effects **of the toxics present,** the poor were treated discriminatorily. **The synergistic effect of multiple toxic compounds can cause an** *additive response*, **an** *antagonistic response* **and/or** *a strait synergistic response*. **Synergistic response is particularly important. The EPA itself in its *Risk Assessment Guidelines* document states: "while some potential environmental hazards involve significant exposure to only a single compound, most instances of environmental contamination involve concurrent or sequential exposures to a mixture of compounds that may induce similar or dissimilar effects." Calabrese notes: "While nearly the entire thrust of public health risk assessment activities has involved derivations for individual compounds, all agree that the real world involves multiple chemical exposures, either concurrently or sequentially. Despite universal agreement on this, regulatory agencies, especially in the environmental domains, have been slow to directly address and specifically incorporate the knowledge of interactions into the risk assessments process." (*op.cit.*)**

Unfortunately, the Health Risk Assessments for Butte Priority Soils failed to consider additive response, antagonistic response and/or strait synergistic response. This is true of EPA Health Risk Assessments as a matter of course: "Data systems that compile information on pollutant concentrations in the environment are generally focused on single, or simple, forms of pollutants; complex mixtures are not assessed due to limitations of cost

and proper procedures." (Diana K. Wegener, et. al., "Equity in Environmental Health: Data Collect and Interpretation Issues, *9 Toxicology & Indus. Health* 775,783)

The environmental justice significance of this failure is that: "Unfortunately, the points where the (Risk Assessment) Mixture Guidelines are weakest are the exact points in which the exposure data linking minority and poor communities are the strongest. Substantial data demonstrate that low-income and minority people are significantly more likely than the rest of society to live near complex mixture 'scenarios'." (Israel, *op.cit.*, p. 13.) [See also Paul Mohal and Bunyan Bryant, *Environmental Racism: Reviewing the Evidence, in Race and the Incidence of Environmental Hazards: A Time for Discourse*; Robert Bullard, *Dumping in Dixie: Race, Class and Environmental Quality and Commission for Racial Justice*; Untied Church of Christ, *Toxic Wastes and Race in the United States: A National Report on the Racial and Socio-Economic Characteristics of Communities with Hazardous Waste*]

Demographic data regarding the Butte Priority Soils site demonstrates that the Priority Soils site falls within the parameters of exposure to synergistic scenarios described above and this conclusion warrants a finding of environmental discrimination by the EPA against the Priority Soils' poor. A common failing of Health Risk Assessment and a failing of the Health Risk Assessments for Butte Priority Soils is the failure to consider demographic correlations to health risk and exposure to toxic substances. Because the Health Risk Assessments for Butte Priority Soils used only generalized exposure assumptions, the risks that are disproportionately distributed to the detriment of the poor who live within Priority Soils are discriminatorily distorted.

Also, the failure to consider the additive response factors and the antagonistic response factors as part of the Health Risk Assessments for Butte Priority Soils also discriminated against the poor. The poor are more likely to experience an additive response and an antagonistic response to various toxics than are the non-poor. Failure to even consider these factors was discriminatorily detrimental to the low-income citizens living within the Butte Priority Soils site.

In summary, the Priority Soils Health Risk Assessments failed to deal with the synergistic interaction of contaminants. Even the EPA admits that human health risk assessment techniques used for single chemical and simple binary interactions: "cannot be extended to complex mixtures because the data requirements of such extensions lead to experimental designs that are impractical." (U.S. EPA Office of Research and Development and *EPA Journal*. Also see: Langdon Winner, "Risk: Another Name for Danger," pp 60-68 in Theodore Goldfarb, ed., *Taking Sides: Clashing Views on Controversial Environmental Issues*, 4th Ed.) "Perhaps the most important complication (of evaluating risks of exposure to chemical mixtures) is the potential for interaction among the mixture's constituents, including synergistic effects in which the combined effect of two or more substances is greater than the sum of the effects of each agent alone."

(Daniel Krewski, et. al., "Carcinogenic Risk Assessment of Complex Mixtures," *Health Hazards Risks from Exposure to Complex Mixtures and Air Toxic Chemicals* at 147,151)

Also the Health Risk Assessments conducted at Butte Priority Soils failed to look at susceptibility to the harms of exposure to the substances of concern at the site in terms of income. This failing discriminatorily affects the low-income citizens of the Priority Soils area. There was no assessment particularly geared to the low-income subgroup of the general population living within the Priority Soils area. In fact the epidemiologic studies used as a basis of the Health Risk Assessments for Priority Soils were based only on studies of healthy white males. (EPA *Equity Report*, Note 12 at 33-34.) Given that the demographic makeup of the Priority Soils poor is definitely not primarily healthy white males, the Health Risk Assessments conduced at Butte Priority Soils failed to adequately characterize the risk factors to the discriminatory detriment of the poor. (U.S. Census Bureau, 2000 Census Data)

Because the focus was on premature death from cancer, the Health Risk Assessments for Butte Priority Soils failed to evaluate low-birth weight, reduced intelligence, asthma, and numerous other environmentally caused diseases. "Once a substance is identified as a potential carcinogen, non-cancer studies often are not pursued, even though the compound may be a toxicant in other respects. It is conceivable that a chemical with a low cancer unit risk might be a potent teratogen, but without a multidisciplinary approach, this will never be know." (Grose, et. al., Interdisciplinary Approach to Assessing the Health Risk of Air Toxic Chemicals: An Overview," *Health Hazards and Risks from Exposure to complex Mixtures and Air Toxic Chemicals* 39, 47)

There is abundant evidence that low-income citizens tend to be more susceptible to the effects of exposure to the toxics present at the Priority Soils site than the non-poor. (See: Edward J. Calabrese, *Ecogenetic: Genetic Variation in Susceptibility to Environmental Agents*; Richard Rios et. al. *Susceptibility to Environmental Pollutants Among Minorities*, 9 *Toxicology and Indus. Health* at 797 and Edward J. Calabrese, *Pollutants and High Risk Groups: The Biological Basis of Increased Human Susceptibility to Environmental and Occupational Pollutants*.) For example, long-term exposure to toxics can produce intergenerational genetic characteristics that increase susceptibility to the toxics found within the Priority Soils site. (Rios, *op. cit*., 797) The Health Risk Assessments for Butte Priority Soils considered no issues of intergenerational equity. Also, for example, the low-income citizens of the Butte Priority Soils Site, as do the poor generally, have elevated rates of hypertension that increases the likelihood of kidney disease that, because the kidneys filter toxics such as heavy metals, means that low-income citizens have a lessened ability to combat toxics exposure. (Rios, *op.cit.*)

Also, the poor tend to have less access to information about the dangers of heavy metals and the ways of lessening heavy metals exposure and have less ability to understand and put into practice the recommendations for lessening exposure. (Israel, *op. cit.*, p. 16 and Rios, *op.cit.*)

It is also important to remember that low-income citizens tend to have poorer nutrition than do non-poor citizens which situation disparately increases their susceptibility to heavy metal toxicity. (Calabrese, *op. cit.*) For example, the poor tend to have a greater likelihood

of Vitamin C deficiency than the non-poor that increases their vulnerability to lead toxicity. The poor tend to have a greater likelihood of calcium deficiency than the non-poor that also increases their vulnerability to lead toxicity. The poor tend to have a greater likelihood than the non-poor of iron deficiency that increases their vulnerability to lead.

Lifestyle factors also affect the susceptibility of the poor to the toxics found at the Priority Soils Site but lifestyle factors were ignored in the Health Risk Assessments for Butte Priority Soils to the disparate detriment of the poor. "Because minority populations tend to have larger percentages of children and pregnant women than the non-poor, [a statistic evidenced at the Priority Soils site] and because "pregnant women, children, infants, and fetuses are more susceptible to adverse health effects from pollutants than are members of the remainder of the population, exposure to pollutants will disproportionately affect minority communities." (Israel, *op. cit.*, p. 17. See also Rios, *op.cit.* and Calabrese, *op.cit.*) In addition, the poor are more likely than the non-poor to smoke and that increases their susceptibility to heavy metal toxicity. (See: U.S. Department of Health and Human Services, *Health Status of the Disadvantaged*; Rios, *op.cit.* and Calabrese, *op.cit.*)

Moreover, the poor have little chance to participate in the development and execution of health risk assessments. Lack of public participation is particularly evident in low-income communities. The EPA itself has said: "poor and racial minority communities are rarely involved in Agency rulemakings and seem to be unaware" of their rights. (*EPA Equity Report.)* The poor as a group have been ignored as regards to the development and implementation of the Health Risk Assessments at Butte Priority Soils.

Israel sums up the problem: "Risk assessment methodology currently incorporates numerous informational biases that may disproportionately affect poor communities . . . Specifically, risk assessments generally fail to observe those adverse health effects that result from above-average exposure, from exposure to multiple chemicals, and from the interactions of toxic substances. Similarly, risk assessments generally fail to observe susceptibility differences as a function of income or race. Genetic differences, disease patterns, social inequalities, and cultural and lifestyle factors all increase the body's susceptibility to chemical substances." (*op.cit.*) A memo by Robert M. Sussman who was Chair of the EPA's Science Policy Council to the director of the EPA admitted that there were informational biases in the EPA's Health Risk Assessment protocol. Sussman also stated that there were deficiencies in the EPA's incorporation of multi-path and multi-sources exposures and "inter-individual" susceptibilities into the EPA's Health Risk Assessment protocols. He noted that these deficiencies contributed to environmental justice problems for the agency. (EPA Science Policy Council Report of the EPA Science Policy Council on Addressing 'Science and Judgment in Risk Assessment,' A Report by the National Research Council, in *Inside EPA*.)

VII. Therefore, given that the Proposed Plan and the Preferred Alternative for Butte Priority Soils are Based on and Justified by a Risk Assessment Process that

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Discriminated against Low-income Residents living in the Priority Soils OU, the Proposed Plan and Preferred Alternative for Priority Soils OU are Based on a Process that Violated Environmental Justice.

VIII. Therefore, the Outcome of that Process, i.e. the Priority Soils Proposed Plan and Preferred Remedy Violate the EPA Mandate to Promote Environmental Justice.

IX. In fact, the Proposed Plan and Preferred Alternative for Priority Soils would actually Increase the Toxic Burden of Butte's Low-income Citizens.

X. Therefore, because of 7 and 8 above, the Proposed Plan and Preferred Remedy for Priority Soils should be declared null and void.

The Proposed Plan and the Preferred Alternative for Butte Priority Soils OU are only as good and sound and valid as the underlying processes that produced the Plan and the Preferred Alternative are good and sound and valid. The Proposed Plan and the Preferred Alternative for Butte Priority Soils OU are only as environmentally just as the underlying processes that produced the Plan and the Preferred Alternative are environmentally just. The environmentally **unjust** Health Risk Assessments conducted at the Butte Priority Soils site, because they are the foundation, grounding, and justification for the Proposed Plan and Preferred Alternative, taint the entire process which the hue of injustice. The environmentally unjust Health Risk Assessments conducted at the Butte Priority Soils OU, because they are the foundation, grounding, and justification for the Proposed Plan and Preferred Alternative, undermine, contaminate and discredit the entire process. Given that environmental justice concerns must permeate all of EPA's activities and process, this failure to promote and encompass environmental justice in the development of the Proposed Plan and Preferred Alternative warrants the discarding of the entire Proposed Plan for Priority Soils.

Butte Priority Soils RI/FS

Submitted by:
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> The object of our profession is to destroy hazardous waste, whenever possible, and to permanently dispose that which cannot be destroyed. Our obligation is to free subsequent generations of the responsibility for caretaking our hazardous residues, not to saddle them with housekeeping chores which, if neglected, will result in the re-pollution of the environment that we worked so hard to clean. (Jack A Caldwell and Charles C. Reith, *Principles and Practice of Waste Encapsulation.*)

Superfund's purpose is to clean up hazardous waste sites that pose a ***threat*** to human health and the environment. Remedies under Superfund should provide a permanent cleanup remedy not

temporary containment. Simply, cleanup is the "act of cleaning up" and the term clean means "pure, free from dirt, contamination, impurities." According to the EPA, Superfund's mission is to "make sites safe, make sites clean, and bring new technology to bear on the problem."

If one carefully examines the major laws and regulations pertaining to Superfund, one finds that they all emphasize the following:

1. **Cleanup** as the **primary goal** of any Superfund activity.
2. The **reduction of toxicity, volume and mobility** of hazardous substances, pollutants, and contaminants at a site. For example, the NCP mandates that the overriding goal of the Superfund remedy selection process is: "to select remedies that are protective of human health and the environment, that maintain protection over time, and that minimize untreated waste." [40 CFR 300.430(a)(1)(i)] Treatment is the preferred approach to dealing with contaminants.
3. **Permanent** cleanup remedies. Section 121(b) of CERCLA mandates that: "Treatment which 'permanently and significantly reduces' the hazardous substances involved is to be 'preferred' over other remedies and EPA must select remedies that utilize 'permanent solutions'. . . ." (Quoted in *Environmental Law Handbook*, Arbuckle, et. al, 10th Edition, p. 88) During the Senate debate on SARA, Senator George Mitchell (D-Maine) argued that permanent treatment means that EPA cleanup plans must result in the permanent and major reduction in the toxicity, volume, and mobility of hazardous substances, pollutants, and contaminants at a site and that this reduction must be to the "lowest level achievable." Senator Mitchell stated: "In addition to the quantitative reduction implied, significant reduction in this context means the minimization of volume, toxicity and mobility of such substances to the lowest levels achievable with available technologies." (132 *Congressional Record*, S. 14914 (daily edition. October 3, 1986) It is clear that the legislative intent was permanent, real cleanups of Superfund sites.
4. **Cost** is **not the major factor** in selecting a cleanup remedy under Superfund. Cost is secondary to protecting human health and the environment. Under Superfund, human health and the environment must be protected from potential threats regardless of cost. During Senate debate on SARA, Senator John H. Chafee (R-RI) noted: "the extent to which a particular technology or solution is feasible or practicable is not a function of cost. A determination that a particular solution is not practicable because it is too expensive would be unlawful." (132 *Congressional Record*, S. 14925 (daily edition, October 3, 1986) The way in which cost is supposed to figure into Superfund decisions is that a determination is first made as to what is the level of protection for human health and the environment which the remedy should achieve and then selecting the most cost effective means of achieving that level of protection. Cost as a balancing criterion does not mean selecting the cheapest remedy. It is clear that the law mandates that the EPA designs a remedy which will be permanently protective of human health and the environment and then finds the most cost effective method of implementing that remedy. "The EPA is never justified in selecting a short-term, impermanent remedy (like landfilling or capping) simply because it is cheaper than a permanent alternative. The law could hardly be clearer." (Environmental Research Foundation, "More Lessons from Superfund.")
5. The use of **institutional controls** is not a substitute for cleanup of a site. "Institutional controls. . . generally shall not substitute for more active measures (e.g. treatment and/or

containment of source material) as the sole remedy. . . . (40 CFR 300.430(a)(1)(iii)(D). See: OSWER Directive 9355.0-69, EPA 540-R-97-013-"Rules of Thumb for Superfund Remedy Selection."

Superfund was designed not only to deal with actual harms to human health and the environment but also with threatened harms and potential threats. CERCLA specifically deals not only with release of hazardous substances but also with the "threat of" release "into the environment of a hazardous substance or pollutant or contaminant. CERCLA defines each of these terms quite broadly." (*Environmental Law Handbook*, p. 76.) Also, Superfund places an emphasis on treatment rather than containment for hazardous waste. [EPA, "Rules of Thumb for Superfund Remedy Selection," 40 CFR 300.430 (a)(1)(iii)(A)]

This paper considers the following issues of significance for the Butte Priority Soils OU RI/FS process:

1. The contaminants found in Butte Priority Soils OU pose a significant threat to human health and the environment. The seriousness of these threats demands ***removal*** as the primary approach to cleaning up the Butte Priority Soils Operable Unit.
2. Reliance on capping will not remove these threats and is not adequately protective of human health and the environment.
3. Reliance on institutional controls will not remove these threats and is not adequately protective of human health and the environment.
4. Reliance on lime abatement will not remove these threats, is not adequately protective of human health and the environment and will create its own problems.
5. In-situ treatment, in general, will not remove these threats and is not adequately protective of human health and the environment.
6. Only ***contaminant removal*** will remove these threats. Only removal of the toxics found in the Butte Priority Soils Operable Unit will be adequately protective of human health and the environment as mandated by Superfund.
7. The RI/FS is inadequate in its consideration of treatment technologies for BPSOU contaminants.
8. The RI/FS process needs to give greater attention to the provisions of the Superfund Redevelopment Initiative.

Site Contaminants found in BPSOU

In considering the significant threats to human health and the environment which the Priority Soils' contaminants pose, one should be wary about any cleanup remedy which leaves substantial amounts of these contaminants in place and untreated to threaten human health and the environment in perpetuity. The public should look askance at any remedy which does not significantly provide for the permanent reduction in the mobility, toxicity and volume of contaminants. The only real ***cleanup*** remedy for these toxics found in the Butte Priority Soils Operable Unit is ***removal of contaminants***. Sometimes people become so involved in the discussion of how to remediate a site that they lose sight of the reasons for the remediation in the first place. All remediation activities should be conditioned by a continuing concern for removing the threats posed by the toxics to be remediated. The following briefly articulates the

serious health and environmental threats posed by some of the contaminants found in the Butte Priority Soils OU.

Lead

> Since one molecule of lead, when it enters a cell, will change the state of that cell, the theoretical question: 'What is an adverse health effect?' becomes important. Dr. H. L. Neddleman

Lead acts the same once it gets into a child's body no matter what the route of exposure. Fifty percent of the lead swallowed by children enters their blood and other body parts even if their stomachs are full. For children, 73% of the lead in their body is in bones and teeth. Only 23% of the lead taken into a child's body will leave in the body's waste. (U.S. Department of Health and Human Services)

One must also consider the sub-clinical health effects of long term, chronic exposure to low levels of lead which have been shown to cause nervous system problems, renal problems, reproductive system problems, interference with enzyme activity, and cancer. *The New England Journal of Medicine* and the American Academy of Pediatrics have claimed that even exposure to amounts of lead considered safe for children have caused lower scores on problem solving tests, lower perception levels, memory loss and learning and coordination disability. Another study found that "Children with only 5 to 7 ug/dl of lead show learning damage, damage to the central nervous system, stunted growth, reduced IQ and other neurobehavioral abnormalities." ("Establishing a Health Based Standard for Lead in Residential Soils," by Patrick Reagan and Dr. Ellen Silbergled, *Trace Substances in Environmental Health.*) The ASTDR (Agency for Toxic Substances and Disease Registry, U.S. Department of Health and Human Services) has noted: "Studies on the effect of lead in children have demonstrated a relationship between exposure to lead and a variety of adverse health effects. These effects include impaired mental and physical development, decreased heme biosynthesis, elevated hearing threshold, and decreased serum level of vitamin D. The neurotoxicity of lead is of particular concern, because evidence from prospective longitudinal studies has shown that neurobehavioral effects, such as impaired academic performance and deficits in other skills, may persist even after lead levels have returned to normal. (ASTDR, "Analysis Paper: Impact of Lead-Contaminated Soil on Public Health," May 1992) It is also reported that the harms are virtually permanent. No wonder the former head of the U.S. Public Health Service, James Mason has concluded: "The more we learn (about lead) the more toxic we find it to be."

Also, it takes very little exposure to lead to cause severe health problems. For example, a child can become severely lead poisoned (60-80 ug/dl) by ingesting only 1 milligram of lead contaminated dust. This is the equivalent of 3 granules of sugar. 35 ug/dl can occur by ingesting approximately 1/3 milligram of lead contaminated dust which is the equivalent of 1 granule of sugar. (*Newsweek*, July 15, 1991) The American Academy of Pediatrics has boldly stated that the only desirable amount of human lead exposure is zero. It is also important to remember that children normally ingest 1 to 3 tablespoons of dirt per day. (EPA and New York State Health Department) The ASTDR in its "The Nature and Extent of Lead Poisoning in Children in the United States: A Report to Congress" demonstrates that when lead is present in the soil, children

will ingest it and we **will see** elevated lead levels in children. "A strong positive correlation is found between exposure to lead-contaminated soil and lead levels." (ASTDR)

No wonder that lead is ranked as "the number one priority hazardous substance" at NPL sites. (ASTDR, "Analysis Paper: Impact of Lead-Contaminated Soil on Public Health," May 1992)

Cadmium

Cadmium is as "probable carcinogen" which is likely to cause cancer of the prostate, kidney, testes, and lung. Apart from cancer, cadmium exposure can produce kidney disease, osteomalacia, progressive glomerular disorders, enteropathy, nutrient malabsorption problems, cardiomyopathy, anemia, depressed immune system, liver damage, increased blood pressure, and reproductive problems. (Lars Friberg, MD, Professor em. Institute of Environmental Medicine, Karolinska Institutet, Sweden; "Nutritional Toxicology of Heavy Metals: Cadmium and Mercury," Cornell University; Environmental Health Education Center, University of Maryland School of Nursing; William H. Hallenbeck, School of Public Health, University of Illinois)

Mercury

Acute health effects of mercury exposure include: kidney damage, pneumonia.
Chronic health effects of mercury exposure include: gum disease, mental deterioration, and harm to the central nervous system.

The reproductive system is also adversely affected by exposure to mercury. (New Jersey State Department of Health, Division of Occupational and Environmental Health) The North Carolina Division of Pollution Prevention and Environmental Assistance declares: "Mercury is toxic by ingestion, inhalation, and skin absorption, with acute and chronic exposure effects including central nervous system and kidney damage. Acute exposure includes nausea, blurred vision, painful breathing, excessive salivation and pneumonitis, while chronic or longer-term exposure includes memory disturbance, hypertension, vision problems, hallucinations, tremors and personality changes. Because mercury can cross the blood-brain barrier, and because it can affect brain development, its effects are of special concern to pregnant or lactating women and young children."

Arsenic

Arsenic has been designated a human carcinogen. Arsenic can cause cancer of the lungs, liver and skin. (*Staying Healthy in a Risky Environment*, New York University Medical Center, p. 365.) Arsenic exposure at low doses can cause nerve damage, cardiovascular problems, skin problems and constitutional complaints such as nausea, diarrhea, gastrointestinal upset, etc. (Johnson and DeRosa, ASTDR, "The Toxicologic Hazard of Superfund Hazardous Waste Sites") Arsenic targets most of the body's organs and is particularly harmful to the gastrointestinal tract and to the skin. Outdoor play is a common arsenic exposure route for children. .

Children are Particularly at Risk for the Pollutants found in Butte Priority Soils

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It is important to remember that with all of the above contaminants found in the Butte Priority Soils, children are particularly at risk from exposure. "Metals are particularly toxic to the sensitive, rapidly developing systems of the fetus, infants and young children. Some metals, such as lead and mercury, easily cross the placenta and damage the fetal brain. Childhood exposure to some metals can result in learning difficulties, memory impairment, damage to the nervous system, and behavioral problems such as aggressiveness and hyperactivity. At higher doses, heavy metals can cause irreversible brain damage. Children may receive higher doses of metals from food than adults, since they consume more food for their body weight than adults." (Physicians for Social Responsibility, "Toxics and Health") Another publication by Physicians for Social Responsibility entitled "Children's Environment Health" notes that: "On a body weight basis, infants and young children drink more water, eat more food, and breath more air than adults. In addition, a child's normal behavior can also put him or her at greater risk. Typical childhood behaviors such as eating exclusively one kind of food, crawling, digging in dirt, and putting objects in the mouth, can all lead to increased exposures to environmental contaminants."

The point of the above discussion of the health effects of some of the main contaminants found in the Butte Priority Soils Operable Unit, is to demonstrate that, given the serious health threats that these contaminants pose, they should not be left in place to effect current citizens of the area nor should they be left in place to threaten future generations of citizens. Discussion of cleanup technology cannot become so absorbed in the technology so as to neglect the threats the technology is supposed to alleviate.

Caps are not Permanently Protective of Human Health and the Environment.

Problems with caps:

1. Metals can be remobilized through bio-irrigation. (Dueri, Sibylle, et. al., University of Laval, Quebec, "Modeling the Transport of Heavy Metals through a Capping-Layer: The case Study of the Flood Sediments Deposited in the Saguenay Fjord, Quebec.")
2. The long term efficacy of caps can be compromised by advection "related to consolidation, diffusion, chemical reactions, and the effect of . . . burrowing activity." (*Ibid.*)
3. Desiccation can cause cracking of the cap cover. (David Daniel, Professor of Civil Engineering, University of Texas, *Geotechnical Practice for Waste Disposal*)
4. The freeze-thaw cycle can produce changes in the structure and fabric of the cover and a way that increases hydraulic conductivity. (*Ibid.*)
5. Caps are difficult to construct correctly. (*Ibid.*)
6. Caps are difficult to maintain and repair. (*Ibid.*)
7. Erosion is a serious problem. (Jack Caldwell, U.S. Department of Energy, *Principles and Practice of Waste Encapsulation*.)
8. Biointrusion can compromise the effectiveness of the cap. (*Ibid.*)
9. Differential settlement of the cap can cause cracking. (Oweis and Khera, New Jersey Institute of Technology, *Geotechnology of Waste Management.)*
10. Caps require regular and often expensive repair. (*Ibid.*)
11. Stabilization of the cap is a problem. (*Ibid.*)
12. Caps present long-term subsidence and settlement issues. (*Ibid.*)

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13. Because of their susceptibility to "weathering, cracking and subsidence" caps have limited long term utility. "Wind, rain, and generalized erosion over time can severely damage even a well-designed . . . cover." (U.S. Department of Energy, Office of Environmental Management, "Remediation Technology Descriptions: Containment.") See also: Merritt, Frederick (ed.) *Standard Handbook for Civil Engineers*, McGraw-Hill, New York.

The extensive use of caps as a cleanup method for Butte Priority Soils would do nothing to reduce the toxicity and volume and mobility of contaminants. Caps do nothing to clean up a site. The extensive use of caps as a cleanup method for Butte Priority Soils would not provide a permanent remedy. The extensive use of caps as a cleanup method for BPSOU would violate the Superfund mandate for treatment over containment. In short, the extensive use of caps for the BPSOU would not be protective of human health and the environment.

Lime Treatment does not Work.

The use of lime abatement will be ineffective as a treatment technology for Priority Soils. A study conducted by Bethel Inc. showed that treatment of heavy metals with lime still allowed the release of 20% of the heavy metals into the environment. (Shimoda, Masao 1994. "Fixation Mechanisms of Toxic Heavy Metals with Cements. Proceedings of 15h U.S./Japan Experts Meeting," U.S. Army Corps of Engineers.) Lime treatment also increases the volume of contaminated material 50 to 100%. ("In-Situ Remediation Technologies for Contaminated Sites," Environment Canada, 11/19/02) The EPA itself in "Wastewater Technology Fact Sheet: Chemical Precipitation (Office of Water, EPA 832-F-00-018) lists numerous disadvantages of lime addition.

The Public should be concerned about too great a Reliance on Institutional Controls.

Institutional controls per se do nothing to reduce the mobility, toxicity, or volume of contaminants. Institutional controls do nothing to clean up a site. The institutional controls being considered in the EPA's RI/FS for Priority Soils would seriously limit productive land uses and greatly compromise the property rights of owners to use their land as they determine. The extensive reliance on institutional controls is also contrary to the Superfund mandate of preference for treatment over restricted land use. Institutional controls do nothing to treat a site. The EPA's own document "Rules of Thumb for Superfund Remedy Selection" states that the law mandates a clear preference for treatment over all other approaches. "EPA expects to use treatment to address the principal threats posed by a site. . . ." [40 CFR 300.430(a)(1)(iii)(A)]. The above document also notes: "Institutional controls. . .generally shall not substitute for more active measures. . . ." (pp. 12-13)

The EPA itself has found significant problems with institutional controls at its other sites. In an article entitled "EPA, Think Tank Studies Show Superfund Land-use Controls Flawed, December 10, 2001" which summarizes "Superfund Report via Inside EPA.com" by Resources for the Future, we find these conclusions, ***reached by the EPA itself***, which due to their significance, I will quote at length:

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"EPA and environmental think tank studies have shown that the federal and state governments' land-use restrictions at Superfund sites, known as institutional controls (IC), are seriously flawed, with an agency study showing the controls are not reliably implemented and the think tank report finding the controls are dramatically under-funded."

"During a November 27 land use control summit, sponsored by the International City/County Management Association (ICMA), EPA officials and the Environmental Law Institute (ELI), outlined numerous shortcomings they have found with EPA's IC monitoring and enforcement efforts nationwide. While EPA released the results of a study showing EPA has failed to ensure Superfund ICs are reliably implemented, and ELI study indicates that EPA's ICs are dramatically under-funded."

"Bruce Means, of EPA's Federal Facilities Restoration and Reuse Office, told attendees that preliminary studies show that half of the ICs implemented under Superfund records of decisions (ROD) were mischaracterized. During a study of RODs conducted during 1999 and 2000, the agency found that half of the ICs established under RODs were not implemented as the agency had planned."

"And Jay Pendergrass of ELI outlined the preliminary findings of ELI's study of state's IC programs, which showed that the programs are severely under-funded."
"In a draft version of the report, Pendergrass found that state environmental programs are underfunded and as a result the sites allocate very little time on IC implementation. The funding and staffing shortfall 'raises concerns about whether [ICs] are implemented as intended and [are] as protective as intended."

"An ICMA source agrees that EPA has serious problems with its IC program, saying that the agency has many RODs with vague or inconsistent references to such controls."
(pages 1-2)

The greater the cleanup of the Butte Priority Soils Operable Unit, the more the site can be used productively. The less cleanup of the BPSOU, the less the site can be used for residences and recreational uses. Given the EPA's admission that institutional controls have failed it in the past, it is amazing that the remedies listed in the RI/FS for Priority Soils call for such extensive use of institutional controls.

<u>Other Problems with Institutional Controls:</u>

a. There is a tendency not to implement institutional controls as time passes. Frequently institutional control mandates are not carried to completion.
b. The effectiveness of institutional controls usually depends upon the ability, personnel and resources of the local government to implement. Often local governments do not have the personnel or resources to devote to the implementation and monitoring of institutional controls. Given the national administration's proposed cutbacks in Superfund allocations, resources will be increasingly unavailable on the national level to monitor implementation and effectiveness of institutional controls. Certainly the financial

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capacity of Butte's local government to implement and monitor institutional controls is greatly limited. Nowhere does the EPA's comprehensively address the above issue.

c. "Institutional controls rely heavily on humans to implement, oversee, and administer them. It is human nature to ignore tasks that no one else seems to care about or where the purpose is not readily apparent. Residual hazardous substances are a classic example of a problem that is not readily apparent." ("Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge?" Environmental Law Institute, p. 2)
d. Although EPA must review the remedy every five years, the frequency of this review process may be insufficient to detect the failure of institutional controls.
e. The use of education as part of the institutional controls strategy is a substantial part of the EPA's approach to implementing institutional controls. Research of previous remedies under Superfund indicates that education programs fail to materialize.
f. "In addition to the direct costs of implementing institutional controls, their use can impose substantial indirect costs on communities, property owners, prospective purchasers and developers by limiting the ways a site may be used. The burden of the restrictions on use of the site falls on the property owner and the community, with the owner reaping potentially lower profits from use of the property and the community receiving lower social benefits from the allowed uses than would have been possible if no restrictions existed." (ELI, *Ibid.)*
g. Because the sites where institutional controls will be implemented will not be cleaned up and will present a continuing potential threat to human health, these sites will be off limits to development in perpetuity. It is difficult to see how the use of institutional controls meshes with the goals of the EPA's Superfund Redevelopment Initiative.
h. It is impossible to determine future possible land uses for the site nor is it possible to predict unanticipated land uses. (See: "Linking Land Use and Superfund Cleanups: Uncharted Territory," by Probst, Hersh, Wernstedy and Mazurek, *Summary of Findings*, RFF, p. 1)
i. "Institutional controls have more problems than just risk miscalculation. Breeches in the site because of future construction, or even animals may cause the control to fail. The lack of a required contingency plan, would not account for new remedies, new information, or failed institutional controls negatively impacts the effectiveness of the treatment. Institutional memory loss was well is an important factor. This memory loss occurs when a party decides to breach the original institutional control without its own knowledge. In fact, in the ICMA (International City/County Management Association) study, the majority of respondents (63%) said that breaches in the institutional controls on a site were highly or somewhat likely. Following up on that question, 30% of the respondents reported that no formal inspection schedule was set up to evaluate the site as require by law." (Erwin Tam, Environmental Science and Economics, UC Berkeley, "Analysis of Institutional Controls at California Superfund Sites.")
j. "Concern has been expressed about the long-term viability of institutional controls as a remediation tool. For example, they may be forgotten; enforcement agencies may not effectively review properties or land users' actions; or land users simply may take their chances. Decision makers should weigh the full costs of such options, including capital costs, costs of long-term sampling and analysis, and costs of replacing equipment, as well as concerns about potential long-term risks associated with contaminants left in place, against the cost options that would remove the contaminants completely. Many local

governments do not yet have the capacity and resources necessary to meet the challenges of long-term stewardship." ("Understanding the Role of Institutional Controls at Brownfields Sites: Major Concepts and Issues.")

k. Because institutional controls leave large amounts of contaminants in place, institutional controls will have to be perpetual. Who is to say what anticipated land uses come up for an institutionally controlled area? For example, fifty years after the record of decision for Butte Priority Soils is implemented, the contaminants will still be there threatening human health and the environment, but will the will be there to restrict land uses in order to prevent the release of contaminants. "Institutional controls 'work' only if they are complied with. And while this is true of any site remedy, institutional controls require monitoring and enforcement over long time periods." ("Linking Land Use and Superfund Cleanups: Unchartered Territory, Probst, et al., Resources for the Future Center for Risk Management.) Will the will to enforce institutional controls exist fifty to a hundred years in the future?

l. Legal, social and political pressures limit the effectiveness of institutional controls. (*Ibid.*)

m. The long-term effectiveness of institutional controls is unknown. "There has, however, been little investigation of what happens at sites on the National Priorities List (NPL) when land use plays a prominent role in the remedy selection process. There also has been little analysis of what institutions are involved in making land use decisions and maintaining land use restrictions over time. It is unclear what legal mechanisms are most effective, what institutions will be responsible for enforcing institutional controls, and who's going to pay for these additional responsibilities. We need to be able to answer these questions if land use-based remedies are to be protective over the long term." (*Ibid.*)

"Planners of long-term disposal systems have long recognized the difficulty of maintaining institutional control over property. . . ." (Jack A. Caldwell and Charles C. Reith, *Principles and Practice of Waste Encapsulation*, 1993, p. 35)

In-Situ Treatment, in general, would be an Inadequate Approach to the Problems of the Butte Priority Soils OU

Problems with in-situ treatment which treatment does nothing to reduce the toxicity or volume of contaminants.

(This discussion is provided to prove that, in general, the various types of in-situ treatment, which may be part of the remedy for the Butte Priority Soils Operable Unit, are inadequate compared to removal. Once these contaminants are removed to a safe repository, they should be treated to reduce their toxicity, hopefully using innovative treatment technologies.)

a. Lacks permanence due to erosion problems.

b. Fails to address the issue that in order to prevent the leaching of metals a pH level greater than 7 must be maintained. Yet native vegetation requires a pH of no more than 5.5. There is a great disparity in in-situ treatment between the pH level necessary to prevent the leaching of heavy metals and the pH level necessary for native vegetation to flourish on the Priority Soils site.

c. Fails to deal with the problem of cadmium ingestion by animals and children.

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d. There is little real world proof that in-situ treatment is a long term, effective remedy for hazardous waste problems In-situ treatment tends to be supported only by computer modeling which is unreliable. The long-term permanence of in-situ treatment is questionable. There is very little experience with the long-term effectiveness of in-situ treatment. There is experience with the failure of in-situ treatment to immobilize metals.
e. Would not adequately address the specific contamination problems caused by the presence of mercury and cadmium.
f. Could actually increase the volume of toxic materials.
g. "Future use of the site may weather the materials and affect ability to maintain immobilization contaminants." ("Remediation Technology Descriptions: Containment," U.S. Department of Energy, Office of Environmental Management, p. 22.)
h. "Reagent delivery and effective mixing are more difficult than for ex situ applications." (*Ibid.)*
i. Sampling and modeling to prove or evaluate effectiveness of in-situ treatment is difficult compared to ex-situ treatment.
j. "The treatment efficiency of in-situ treatment is almost always less than ex-situ treatment." ("In Situ Treatment of Contaminated Sediments," Jon Reynolds, National Network of Environmental Management Studies Fellow, prepared for U.S. EPA, p.6)
k. "One of the most important limitations (of in-situ treatment) is the difficulty with or lack of process control." (*Ibid.*)
l. "Since mixing and temperature control are difficult to control in-situ, in-situ solidification may be more limited than other in-situ treatments. In addition, in- situ solidification may not change the toxicity of the contaminants in the sediment. Therefore, long term performance is a concern because erosion and diffusion could eventually release the contaminants." (EPA, 1994) [*Ibid.*, p. 8}
m. The use of lime abatement, as discussed in the RI/FS for Priority Soils, will be ineffective. A study conducted by Bethel Inc. showed that treatment of heavy metals with lime still allowed the release of 20% of the heavy metals into the environment. (Shimoda, Masao 1994. "Fixation Mechanism of Toxic Heavy Metals with Cements. Proceedings of 15th U.S./Japan Experts Meeting," U. S. Army Corps of Engineers, 12 pages)
n. In-situ treatment may actually increase the solubility of metals. (Kita, D. and Dubo, H. 1983. "Several solidified sediment examples. Proceedings of the 7th U.S./Japan Experts Meeting," U.S. Army Corps of Engineers, pp.192-210)
o. In-situ solidification failed as a heavy metal treatment mechanism for the Manitowoc River in Wisconsin. (See Reynolds, *op. cit*, p. 18-20)
p. A study by the U.S. Army Corps of Engineers on mobility after stabilization found that "metal stabilization was not achieved, and in some cases, metal mobility was enhanced." (Meyers, et. al., 1994, "Solidification/stabilization technology for reducing the mobility of heavy metals in polluted sediments. Proceedings of the 15th U.S./Japan Experts Meeting," U.S. Army Corps of Engineers, pp. 273-281)
q. "The in-situ treatment in Hamilton Harbor and GE's Hudson River field study both resulted in approximately 50% treatment efficiencies. These are very low compared to ex-situ treatment. . . .'(EPA 1994) cited in Reynolds, "In-Situ Treatment of Contaminated Sediments," EPA, *op.cit*, pp. 9-15
r. There are problems with geomorphic stability and longevity and maintenance. (See: Caldwell and Reith, *Principles and Practice of Waste Encapsulation*, pp. 29-37.)

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s. The varying depths of contamination in the Priority Soils area will make implementation of in-situ controls difficult.
t. There is little data to support the conclusion that in-situ treatment has long-term effectiveness.
u. There is not enough information about soil characteristics in the Butte Priority Soils site to make any kind of determination as to whether or not the proposed in-situ treatment will be effective. Little is known about factors such as void volume, soil pore size or about permeability—all of which are of critical importance in determining the effectiveness of the in-situ treatment.
v. There is the possibility that organic compounds found in the contaminants may interfere with the in-situ agents. (See: *In-Situ Remediation Technologies for Contaminated Sites*, Environment Canada, 10/24/2001, p. 5.)

Inadequacy of RI/FS Investigation of Treatment Technologies available for Cleanup of BPSOU

The current RI/FS document for BPSOU is inadequate in its discussion of treatment technologies. It only looks at lime abatement, a technology with significant problems, as a possible treatment method for the BPSOU. A greater investigation of alternative, innovative treatment technologies for the site needs to be conducted as part of the RI/FS process.

Butte Priority Soils and the Superfund Redevelopment Initiative

The Superfund Redevelopment Initiative's purpose, as summarized by EPA, is "to facilitate the return of the country's most hazardous waste sites to productive use by selecting cleanup remedies that are consistent with the anticipated further use of the sites." (*Superfund Redevelopment Initiative, Frequently Asked Questions*, USEPA, July 2000, p. 1) EPA is committed to returning remediated sites to productive uses. (*Superfund Redevelopment Initiative Overview Summary*, USEPA, September 2002, p. 1) Productive uses can be "commercial, residential, ecological, recreational, agricultural, governmental or other new uses. . ." (*Superfund Redevelopment Initiative: Summary of Benefits,* USEPA, March 2000, p. 1) After communities have determined what they want the future use of the remediated site to be, EPA's goal is to work with the affected communities to develop remedies that will "protect that use." (*Ibid.*) Consistent with the overriding goal of protection of human health and the environment, EPA will select remedies that facilitate future productive uses of a site.

Community involvement is an integral part of the Redevelopment Initiative process. "The Superfund Redevelopment Initiative makes it possible for communities to have a strong voice in local land use decisions that affect them, helps to ensure the effectiveness of our clean ups, generates jobs and increases property value.' (*Superfund Redevelopment Initiative, 2002 Pilot Snapshots*, USEPA, July 2002, p. 1) EPA will work with communities to determine what are the preferred uses of the sites after cleanup. (*Ibid.*) For example, Milltown has received a $40,000 pilot grant "to prepare and submit to EPA a report on the anticipated future uses of the site." (*Ibid.*, p. 5)

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Susan Bromm (Deputy Director, Office of Site Remediation Enforcement, USEPA and James Lofton (Senior Counsel, U.S. Department of Justice, Environmental and Natural Resources Division, Environmental Enforcement Section) summarize the Superfund Redevelopment Initiative:

> **"Although reuse had been an important part of the cleanup of many sites, this Initiative created a coordinated, nationwide effort to ensure that reuse was considered at every site. The initiative also ensured that processes and tools were in place to enable redevelopment to occur. Another important element of the initiative was to ensure that consideration of future use occurred early enough in the cleanup process so that remedy decisions could be made that were consistent with this future use. Finally, this initiative was designed to promote an early public dialogue on re-use issues to provide timely public input into the decision-making process. EPA considers itself an active partner with other stakeholders in returning sites to productive uses." (*Negotiations in Superfund Cases-The Role of Communities in Site Redevelopment*, p. 3)**

The RI/FS process needs to culminate in a proposed remedy that explicitly relates to and incorporates the features of the Superfund Redevelopment Initiative as outlined above. Specifically, a reuse assessment should be conducted for the BPSOU. Removal of contaminants is the remedy most attuned to the mandates of the Superfund Redevelopment Initiative.

Summary

Given that the contaminants found in the Butte Priority Soils Operable Unit pose a significant threat to human health and the environment, given that the purpose of Superfund is to deal with these threats through a cleanup which permanently reduces the mobility, toxicity and volume of contaminants in order to protect human health and the environment, given that capping and institutional controls do not provide a permanent cleanup remedy for Butte Priority Soils, given that EPA has a preference for treatment over containment, given that in-situ treatment has serious problems, given that, through the Superfund Redevelopment Initiative, EPA is committed to promoting future productive land uses for cleaned up sites, removal and future treatment of the contaminants found is the Butte Priority Soils Operable Unit should be the preferred remedy for the Butte Priority Soils Operable Unit. "The people's safety is the highest law." (Roman law maxim)

Environmental Justice and Butte Priority Soils

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On February 11, 1994, through Executive Order 12898, President Clinton declared that: "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental

effects of its programs, policies, and activities on minority populations and low-income populations in the United States." According to the EPA, the President's concern was that: "minority and low-income populations bear a disproportionate amount of adverse health and environmental effects." Today, the EPA further defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, ***implementation, and enforcement*** of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal and commercial operations ***or the execution of federal, state, local, and tribal programs and policies***." (Emphasis supplied.) EPA administrator Whitman in August 2001 stated that environmental justice would be an integral part of all EPA programs, policies, and activities. According to Whitman, the goal of the EPA's Environmental Justice program is that no segment of the population, including low-income citizens, suffers disproportionately from the EPA's policies, programs and activities. Furthermore, EPA has a mandate to provide for the equitable distribution of the burden of cleaning up sites. (The Office of Solid Waste and Emergency Response [OSWER] in their *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* mandates that "Environmental Justice issues should be considered at all stages of policy guidance and regulation development, beginning with preliminary efforts" and that environmental justice should be integrated into all agency actions. (OSWER Directive 9200.3-18FS, EPA540/F-95/023)

This above OSWER Directive also mandates that the economic/regulatory impacts of EPA decisions be considered in terms of environmental justice issues. Part of the EPA's environmental justice strategy is to promote a "sustainable economy" in areas affected by EPA rules, policies and programs. For example, OSWER Directive No. 9200.3-17 entitled *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* states: "Where environmental justice concerns or the potential for concerns are identified, staff should conduct an appropriate analysis of the issues(s). To the extent practicable, staff should evaluate the ecological, human health (taking into account subsistence patterns and sensitive populations) and socio-economic impacts of the proposed decision document on minority and low-income communities. Examples include how a policy on future land use would impact minority or low-income communities versus non-minority, affluent communities. The analysis should be documented and retained for public availability." (**This has not been done by the Montana Office of EPA for Priority Soils.**) The point is that the Montana Office of EPA has a mandate to consider how its enforcement actions will disproportionately and adversely economically affect low-income areas and has a mandate to mitigate disproportionate adverse economic impacts on low-income citizens. (See: *Incorporating Environmental Justice Principles into the CERCLA Process*, May 1998.) Low-income citizens should not bear a disproportionate or undue regulatory burden when it comes to the development of cleanup activities. (EPA, Region 8, *Environmental Justice Action Plan*, April 2003)

The Region 8 of EPA also equates environmental justice with the legal concept of equal protection under the law. In April of 2003, Region 8 issued its *Environmental Justice Action Plan* which mandates that the agency will work with stakeholders to "correct and prevent inequitable environmental and public health impacts to any groups." In short, environmental

justice mandates a particular concern with populations, such as low-income populations, that bear a disproportionate burden of environmental degradation and environmental regulations. "Fair treatment means that no group of people, including a racial, ethnic, or social economic group should bear a disproportionate share of the negative . . .consequences resulting from . . .the execution of federal, state, local and tribal programs and policies." (Headquarters Press Release, EPA, *Administrator Whitman Reaffirms Commitment to Environmental Justice*, August 21, 2003)

Presently, Montana Office EPA actions with regard to the RI/FS process for Priority Soils have not followed the policy mandates regarding environmental justice. Presently, Montana Office EPA actions to develop a proposed plan for the Butte Priority Soils Operable Unit violate the EPA mandate to promote Environmental Justice.

This paper makes the following arguments:

1. Butte has a significant number of low-income citizens.
2. Butte's low-income citizens tend to be congregated in the Butte Priority Soils Area.
3. Low-income citizens in Butte bear a disproportionate burden of exposure to heavy metal contamination.
4. Contrary to the EPA mandate to promote Environmental Justice, the current development of the proposed plan for Butte Priority Soils will result in a plan that will continue and exacerbate the disparate, adverse treatment and environmental burden of low-income Priority Soils area citizens.
5. Contrary to the EPA mandate to promote Environmental Justice, the current development of the proposed plan for Butte Priority Soils will result in a disparate, adverse regulatory burden being placing on low-income Priority Soils area citizens.
6. Contrary to the EPA mandate to promote Environmental Justice, the current development of the proposed plan for Butte Priority Soils will exacerbate rather than ameliorate the disparate economic burden being placed on low-income Priority Soils area Citizens.

Low-Income Citizens in Butte and Heavy Metals Exposure

According to the 2000 Census, 10.7% of Butte families live in poverty, compared to 10.5% across the state. About 15% of the Butte population lives below the poverty line. Also, according to the 2000 Census, close to 25% of Butte families with children under the age of five years have incomes below the official poverty line. Fifty-eight percent of the homes without fathers have incomes below the official poverty line. According to the Montana Department of Public Health and Human Services, in 2002, about 2.4% of Butte's citizens were receiving Temporary Assistance for Needy Families compared to the state average of 1.89%. Over 10% of the Butte population was receiving food-stamps compared to 7.56% statewide.

Studies also indicated that the vast majority of the poor live in the area encompassed by Butte Priority Soils. For example, of the 1200 houses in Butte that have had a high risk of lead, the vast majority are in the Butte Priority Soils site. Compared to Butte as a whole, the low-income citizens living in the area encompassed by the Butte Priority Soils Operable Unit bear a

disproportionate burden of exposure to toxics compared to the rest of the community. Comparing income levels to quantity of toxics present clearly demonstrates that low-income citizens in Butte bear a disproportionate toxics burden. The poor in Butte have a greater risk of cancer from exposure to heavy metals than do the non-poor. The poor in Butte are more threatened by the release of toxic, heavy metals associated with mining than the non-poor. (See: Environmental Defense Fund, *Summary Report: Silver Bow County*, 11/24/03) [The EPA's *Revised Community Involvement Plan for Butte Priority Soils Operable Unit,* November 2003 notes the extent of poverty in Butte but makes no attempt to assure that low-income Butte citizens are represented in a meaningful way or have meaningful opportunities to participate in the decision making processes surrounding Priority Soils. The plan makes no accommodation for eliciting the views of low-income citizens for the Priority Soils area. This is directly contrary to stated EPA policy.)

Remedy Selection Process for Butte Priority Soils violates Environmental Justice

RASD (Response Action Summary Document)

A significant portion of the Butte Priority Soils site (422 acres) has been subjected to TCRA/Emergency Response actions. Although citizens of Butte were originally assured by the EPA that these previous actions would be reevaluated using the full Superfund process and in terms of the nine Superfund evaluation criteria, we are now being told that these TCRA/ER actions will not be evaluated using the full Superfund criteria but will, rather, be evaluated using a unique, hybrid document called a Response Action Summary Document (RASD). As stated in the current RASD, most of the previous TCRA/ER actions in Priority Soils will get a "no further action" designation in the proposed plan for Butte Priority Soils. In short, the TCRA/ER actions will be part of the proposed plan never having been evaluated using the full Superfund process.

What does the RASD have to do with Environmental Justice?

Using the RASD rather than the full Superfund process will assure that the poor in the Butte Priority Soils Operable Unit will continue to receive negative, disparate treatment. Using the RASD as currently planned will perpetuate environmental discrimination and will perpetuate unequal environmental treatment for low-income citizens. Using the RASD rather than the full Superfund process will mean that the low-income citizens of the Priority Soils area will bear a disproportionate economic burden as a result of cleanup. **Why?** The RASD approves, without full and complete review, the using of caps, fences and institutional controls, rather than removal and treatment of toxic materials. This emphasis on caps, fences, and institutional controls rather than treatment and removal will mean that a disproportional burden of living in a contaminated area will still be endured by the poor. Using this RASD will assure that the poor will continue to be more environmentally burdened than the non-poor. As a result of this RASD remedy, the poor in Butte will continue to be at a comparative environmental and economic disadvantage compared to the non-poor in Butte.

Compared to other recent Superfund remedies in Montana at Milltown and Silver Bow Creek, which areas do not have the large numbers of low-income citizens as does the Priority Soils Area but which areas' plans call for extensive removal of toxics, the Priority Soils poor are getting an inferior cleanup under this RASD process. Compared to the cleanups at Milltown and along

Silver Bow Creek, the effect of the RASD will be to further discriminate against low-income citizens in the Butte Priority Soils area by giving them what amounts to a "second-class" cleanup. The RASD will mandate leaving vast amounts on contaminants in place perpetually to threaten the citizens of the area.

Furthermore, the RASD, contrary to the EPA mandate that environmental justice issues be a part of all agency actions, does not consider issues of environmental justice. Issues of environmental justice are completely ignored in the RASD.

Priority Soils' Decision Making Process Violates Environmental Justice Mandate

Another problem with the RASD as it relates to environmental justice regards the Montana EPA's decision-making process regarding Priority Soils. The EPA mandate to promote environmental justice states that affected citizens, such as low-income citizens, will have full and meaningful participation and involvement in the remedy selection process. Particular and special concern is to be given to the concerns of low-income citizens. Special effort is supposed to be made by EPA to involve in a meaningful way low-income citizens and minorities. The TCRAs and Emergency Response Actions conducted on Butte Priority Soils failed to consider environmental justice issues. This is contrary to the EPA mandate that environmental justice will be a specific component of program reviews, enforcement initiatives and activities and compliance work. (Statement of EPA Administrator Carol Browner, *The EPA's Environmental Justice Strategy*, April 3, 1995) The EPA document entitled *Partners in Science: Environmental Justice* states that: Environmental justice includes the fair treatment and meaningful involvement of the poor and minorities in "the development, implementation, and enforcement of environmental laws, regulations and policies."

Previous actions on Priority Soils did not provide for meaningful involvement by low-income citizens. According to EPA policy, public involvement in TCRA/Emergency Response Actions is considerably less than that provided during a full Superfund process. Currently, no effort is being made by the EPA to solicit specifically the views of low-income citizens. This lack of low-income citizen participation is also contrary to EPA Administrator Christine Todd Whitman's directive in 2001 that environmental justice concerns permeate all EPA policies, programs and activities. (EPA, *Environmental Justice Fact Sheet, EPA's Commitment to Environmental Justice*, May 2003) The EPA calls for stakeholder participation and for extraordinary efforts to achieve minority and low income participation but the low-income citizens in the Priority Soils area have no effective representation in the decision making process regarding Priority Soils. (See: Region 8, EPA, *Why is Environmental Justice of Concern?-Who cares about EJ?*) In general, the public participation requirements for TCRAs and Emergency Response Actions are significantly less than they are for the full Superfund process. ***By allowing these TCRA and Emergency Response actions to get a "no further action" designation when it comes time to select the final remedy, will mean the low-income citizens were excluded from the final Priority Soils remedy selection process and environmentally disenfranchised.***

Current Montana EPA Priority Soils Community Involvement Activities do not include or represent Low-Income Citizens.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

On the current EPA *Citizens Work Group* on Priority Soils, low-income residents of the Priority Soils area are grossly underrepresented, if they are represented at all. There are **no low-income** citizens from the Priority Soils Site on the Citizens Work Group. This lack of direct representation of low-income citizens on the EPA's Citizens Work Group directly contradicts the EPA mandate that the disadvantaged be an integral part of the decision making process regarding cleanup. The interests of low-income citizens who live in the Priority Soils area were not represented in the Revised Community Involvement Plan developed for the Priority Soils Operable Unit in November 2003.

Current RI/FS Process for Priority Soils fails to consider Environmental Justice

It is not just the RASD that is remiss in considering issues of environmental justice, but the whole, current RI/FS process for Priority Soils isn't explicitly considering issues of environmental justice. The data on income levels in the Priority Soils area clearly indicates that this is an area of significant low-income citizens. To ignore the impact of the proposed remedy on these low-income citizens violates the environmental justice mandate of EPA.

Property Values, Economic Revitalization, Priority Soils and Environmental Justice

Also under the current RI/FS process, the low-income citizens of Priority Soils will bear an unequal economic/regulatory burden as the result of cleanup. The EPA itself admits that the presence of hazardous wastes lowers property values. This negative impact affects both residential and commercial property values. The EPA estimates that as a result of the presence of toxic wastes, property values are diminished by 2-8%. (EPA, *Property Values, Stigma, and Superfund*) A study by McClelland found that there was a major correlation between depressed selling price and the presence of hazardous waste. (McClelland, et. al., "The Effect of Risk Beliefs on Property Values, *Risk Analysis*, at press.) Mundy Associates, LLC in "The Impact of Hazardous Material on Property Value" found: "When the public becomes aware that a contaminated property poses a health or financial risk (either real or perceived), the property is transformed into a problem property, which will affect value. When the market perceives a property as a problem, values will be affected in several ways. A disclosure requirement by the sales agent or seller, concern on the part of the lender, and appraiser uncertainty all may have a noticeable effect on the marketability of the property. When a property loses it marketability, it also loses its value. Contaminants affect both income and marketability."

Given that low-income citizens are located disproportionately in the Priority Soils area, any remedy that lessens property values, decreases income from property, and makes it more difficult to sell property would have a disproportionate and discriminatory effect on low-income citizens. The RASD fails to consider economic issues as regards Butte Priority Soils. Currently, the RI/FS process fails to consider economic issues as regards Butte Priority Soils.

Furthermore, the Priority Soils RI/FS process has also failed to consider the mandates of the Superfund Redevelopment Initiative and the Land Revitalization Initiative Action Agenda (April 10, 2003). For example, the EPA states in an article entitled *Land Revitalization Initiative*: "This Land Revitalization Initiative emphasizes that cleanup and reuse are mutually supportive goals, and that proper reuse should be an integral part of the way EPA does business." The article

continues: "The days of erecting chain link fences around a property and posting 'Keep Out' signs are over. Cleaning up previously contaminated properties for reuse can help reinvigorate communities. . . ." In its *Action Agenda* to accompany the initiative, the EPA states that the "land revitalization is an integral part of all EPA cleanup programs and ***reuse is considered early*** in the cleanup process. (Emphasis supplied.) A cleanup that is protective of human health, but leaves a property unused because it is surrounded by a chain link fence and 'do not enter' signs, may not fully benefit the people who live around it. The *Agenda* takes important steps to assist both buyers and sellers in transforming once environmentally-impaired properties into community assets."

The point is that presently the RI/FS process is not considering or implementing the mandates of either the Superfund Redevelopment Initiative or the Land Revitalization Initiative. For example, the RASD, by placing previous TCRA/Emergency Response Actions in the "no further action" alternative category, means that caps, fences, "do not enter" signs, and institutional controls **will be** a primary remedy for Priority Soils. Contrary to the mandates of the Superfund Redevelopment Initiative and the Land Revitalization Initiative, large areas of Priority Soils will be unavailable for reuse and for productive future land uses. Leaving contamination in place will retard future productive land uses and would hinder economic redevelopment of the Priority Soils area. Will potential developers find attractive an area with large segments of land declared off limits because of contamination? This failure to incorporate the Redevelopment Initiative's and the Land Revitalization Initiative's mandates into the RI/FS process, which is contrary to OSWER Directive 935.7-04-*Land Use in the CERCLA Remedy Selection Process*, means that Butte's low-income citizens, who live primarily in the Butte Priority Soils Area, will continue to bear a disproportionate handicap and burden as a result of the EPA's actions at the Priority Soils Site. By perpetuating economic stagnation, an unequal economic/regulatory burden would continue to be placed on low-income citizens. The EPA process at Priority Soils will help perpetuate poverty in Butte.

The Butte Priority Soils RASD proposes leaving vast areas of contamination in place with caps, fences, and institutional controls which areas will be a constant and continual drag on economic revitalization and productive future land uses. Leaving significant amounts of contamination in place will have a profound negative and harmful effect on the housing market in uptown Butte as well as the over-all economic health of the Priority Soils area. People will be discouraged from buying an older home in the Priority Soils area if they know that the area continues to contain significant amounts of contamination. People will be reluctant to improve existing housing. The housing stock in the Priority Soils area will continue to deteriorate and will be available or affordable only to the low income. Leaving contaminants in place will perpetuate substandard housing for the poor. It is also important to remember that the housing stock affects the economic vitality of the whole Priority Soils area. A depressed and deteriorating housing stock is a further rag on economic revitalization.

It is the low-income who will bear the disproportionate burden of the EPA proposed remedy. The extensiveness of poverty and the number of low-income citizens in the Priority Soils area should be an impetus for the Montana EPA to include economic revitalization and future productive land uses in the RI/FS process for Priority Soils.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

Summary

Although the formal proposed plan for Butte Priority Soils is some time in the future, the current RI/FS process for Butte Priority Soils is adverse to the promotion of environmental justice. The proposed plan for Priority Soils and the eventual remedy for Priority Soils will grow out of the RI/FS process. If the RI/FS process is flawed, the products of that process will be flawed. As far as the issue of promoting environmental justice is concerned, the RI/FS process is fatally flawed. (It should be noted that EPA policy mandates that environmental justice consideration be a part of all remedy selection processes and that environmental justice consideration takes place ***early*** in the remedy selection process.) Given the parameters for the current Priority Soils RI/FS, which have already been announced by the Montana Office of EPA, given the issues that have been taken off the table such as previous TCRA/Emergency Response Actions, given that some major sources and pathways of contamination will not be addressed such as indoor dust, given that the mandates of the Superfund Redevelopment Initiative and the Land Revitalization Action Agenda have been so far largely ignored in the development of the RI/FS, and given that low-income citizen stakeholders have not been represented in the decision making or community involvement processes related to Priority Soils, one can easily conclude that whatever proposed plan comes out of the RI/FS process will ignore issues of environmental justice. The results of the current RI/FS process will mean that the poor in Butte will continue to bear a disproportion, unequal burden both in terms of the presences of toxic materials and in terms of the drag on economic development and revitalization which these toxic materials occasion. The current flawed RI/FS process will result in a remedy which is neither fully protective of human health nor promotes future productive land uses. The current RI/FS process is directly contrary to the EPA's own policy mandates, cited in detail in the body of this paper, that call for an equitable distribution of environmental risk and an equitable distribution of the regulatory burden of cleaning up toxic sites.

Because the current RI/FS process does not include members of the low income citizens who predominate in the Priority Soils area the current RI/FS process is contrary to the EPA's own mandate that these "stakeholders" be an integral part of the decision making process regarding Priority Soils and that special consideration be given to minorities and low-income citizens. Because low-income citizens are primarily concentrated in the Priority Soils Area, they will bear this disproportionate burden. The poor will be burdened by toxics left in place and not treated. The poor will be burdened by a cleanup that retards rather than promotes economic reuse and redevelopment. The poor will be burdened by not being a part of the decision-making processes on Priority Soils. In fact, low-income citizens will be worse of under the Montana EPA approach then they were before. The Montana EPA plan will actually increase the level of environmental and regulatory discrimination.

I would urge the Montana EPA to correct these environmental justice problems. I would urge that the RASD either be scrapped or, at a minimum, be re-written to include a full consideration of previous TCRA/ER actions using the all nine Superfund criteria. I would urge that environmental justice concerns be specifically, comprehensively, and meaningfully addressed in the whole RI/FS process. I would urge special concrete efforts to see the poor represented in the process. I would urge that issues related to productive future land uses be specifically addressed in the Priority Soils RI/FS. All that I am asking regarding environmental justice is part of EPA policy and procedures. I am asking that these policies and procedures by followed with regards

to the Priority Soils RI/FS and remedy development process. I am asking for a remedy that redresses rather than exacerbates the unequal distribution of the environmental, economic and regulatory burden that low-income citizens have suffered in the past.

Comments: Issues/Topics of Concern—Five Year Review
Submitted by:
[Resident #]
Butte, Montana 59701

Stormwater Runoff

The area of uptown Butte Montana was the scene of extensive mining activity in the past. This area has been designated under Superfund as the Butte Priority Soils OU. One of the identified problem areas was Storm Water Runoff into Silver Bow Creek. During Butte's frequent storm water runoff events, arsenic, lead, mercury, copper and zinc are washed away, ultimately arriving untreated into Silver Bow Creek.

The Superfund remedy for Butte Priority Soils, as well as other subsequent decisions, has mandated the use of storm water runoff controls as part of the remedy. EPA in Montana left the enforcement of these controls primarily up to the local Butte/Silver Bow government which is also a PRP.

The problem is that the local government is not enforcing these controls to any appreciable extent. Is this lax enforcement all due to there not being a consent decree in place? Are we powerless to control storm water runoff until there is a consent decree? What if there is no consent decree in the near future? Storm water runoff is still polluting Silver Bow Creek and the local government seems unable or unwilling to enforce the controls. I suspect the latter reason because they do not want to "offend" local contractors, homeowners, property owners, etc. Of course, I may be wrong. If there is some compelling reason for the lax enforcement, I would like to know what it is and how it can be remedied.

During the summer of 2014, Sara Sparks and Nikia Greene of the EPA kindly gave me a "tour" of just a few of the problem areas related to storm water runoff. The tour was very informative. I was shocked. Streaks of contaminated runoff could be seen flowing into drains directly, untreated, into Silver Bow Creek. Surprisingly, many of the properties that I saw were owned or controlled by Butte/Silver Bow local government. It was obvious that the storm water controls were not being enforced by local government. A couple of weeks ago I did my own survey and found numerous sites both privately owned and owned/controlled by local government where storm water runoff was unabated and uncontrolled.

My understanding is that although EPA can delegate to local government the task of enforcing the controls, ultimate authority and responsibility for the quality of the cleanup remains with EPA. I have contacted EPA officials in the past and not received an answer as to why these clearly mandated controls are not being enforced or implemented other than a reference to the consent decree. I thought that abundant control regulations/rules were already in place which, if they were enforced, would help to solve the problem. What is stopping EPA from enforcing these controls? Why isn't Butte local government compelled to do the job they are supposed to

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

do? This has been going on for some time. When will it stop? Again, I will reiterate, if there is a good reason why Butte Silver Bow is unable to enforce storm water runoff controls, please let me know.

The Superfund remedy is being compromised by this lack of storm water runoff controls enforcement by local government. The regulations are in place but are not being applied to the problem. Again, I ask why? I read recently that EPA is vigorously enforcing storm water controls in Hawaii with hefty fines. Why hasn't enforcement been as forceful in Butte?

For the waste in place remedy in Butte to work, the waste must stay in place. It cannot be allowed to flow off the Butte Hill into Silver Bow Creek.

Certainly, educational/outreach activities can help. But they are no substitute for enforcement of existing decisions. Voluntary compliance is spotty and uneven. Enforcement places all on a level playing field of compliance.

The current Five-Year Review must consider the issue of stormwater runoff.
During acute stormwater runoff events water quality standards are violated for Silver Bow Creek. The Five Year Review must address this problem.

In summary regarding stormwater runoff, the following would probably be agreed to by all:

1. Storm water runoff from the Butte Hill is a serious issue and, if not properly controlled, storm water runoff presents a significant threat to the Superfund cleanup remedy for Butte Priority Soils.

2. Much of the enforcement of storm water runoff prevention and control has been delegated by EPA to Butte/Silver Bow local government.

I have serious concerns about this delegation of responsibility for the enforcement of storm water controls to Butte/Silver Bow local government:

A. Butte/Silver Bow local government enforcement has been lax and virtually non-existent.

B. Many sites that contribute to the storm water runoff problem are actually maintained and/or owned by Butte/Silver Bow local government.

How can the public have any confidence that storm water runoff controls will be enforced by local government in the future? If these controls are not enforced, the BPSOU remedy will be compromised. If Butte local government cannot control the storm water runoff from their own property, what confidence can the public have that local government is up to the task of enforcing storm water controls?

While EPA can delegate this enforcement of storm water runoff controls to local government as an administrative convenience, **ultimate responsibility for the implementation of storm water runoff controls as part of the Superfund remedy remains with the EPA, not local government.**

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

What assurances does the public have that things will be done differently with regard to storm water enforcement by local government? What confidence can the public have that Butte local government is up to the enforcement task when it has failed in this task in the past?

Perhaps to put this a different way: What has been the reason for lax enforcement of storm water runoff control regulations by local government in the past? What will change to over come these barriers? What is preventing local government from strictly enforcing storm water runoff controls?
Is it a lack of money? Is it a lack of personnel? Or, is it a lack of will?

Whatever the cause, it is EPA's duty to make sure that storm water controls are strictly enforced. The integrity of the Superfund cleanup demands strict enforcement. ***What will EPA do to assure the public that these storm water runoff controls will be strictly enforced by local government?***

My concerns have not been addressed by the Montana Office of EPA.
I received a cursory response from the EPA's Sara Sparks to the effect that EPA was limited because of on-going consent decree negotiations, that there had been problems and that sometime in the future the issue of lax storm water enforcement would be addressed. The exact response was: *We continue to work with all parties to address storm water issues. I agree that there has been some problems and we will meet weekly to address the issues.*

This is a non response response that perfunctorily condescendingly dismisses my detailed complaint. It reminds me of a perfunctory State Department communique after a meeting.

This response contains no answers to my direct question:

1. Why has enforcement of storm water controls been missing? EPA was aware of the problem. I was even taken on a storm water runoff "tour" by EPA folks who pointed the problem out to me. My question remains: Why has nothing been done?
2. Why hasn't EPA followed and corrected where necessary the poor performance of its PRP agent Butte/Silver Bow local government? It seems the problem was turned over to local government and then dropped.
3. How do consent decree negotiations limit EPA's ability to enforce previously promulgated and adopted storm water runoff controls that have nothing to do with the consent decree?
4. What assurances does the public have that these meetings will produce results? EPA Montana people have been meeting with Butte/Silver Bow officials in the past and nothing has been done to enforce, in a meaningful manner, storm water runoff controls. What will be different this time?
5. Will these monthly meetings be open to the public? Will reports be provided of progress to the public? How will the public be involved. Dismissive answers to serious questions as I received do not warrant public confidence in the process or in the result.

I would urge the following:
That as quickly as possible a detailed plan be developed for addressing and controlling storm water runoff issues. This plan will mandate specific, concrete and measurable actions and

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

results with timetables attached for compliance by local government. This process will be monitored. Reports will be given to the public.

Not only am I shocked that EPA has allowed this problem to get to where it is. I am shocked at the EPA's lack of concern and lack of any sense of urgency. My hope in contacting Region 8 and national headquarters was that something would be done to fix the problem. What I have gotten is the problem kicked back to where it originated--with the Montana Office of EPA.

No wonder citizens feel that the EPA is not accountable to citizens and is impervious to citizen input.

The storm water runoff matter is not addressed. Storm water runoff continues to be a major problem compromising the Superfund cleanup in Butte and nothing on the horizon indicates that EPA is taking this lax enforcement seriously.

While having construction projects to address the issue is important, these projects are no substitute for enforcing the storm water runoff controls currently in place.

I see that the EPA will continue to rely on voluntary compliance and "education" to achieve storm water runoff control.

Nationally, as the EPA's Office of the Inspector General has determined, voluntary controls that rely on "education" do not work to significantly solve environmental remediation problems. The voluntary approach has not worked in the past in Butte and there is no reason to conclude that it will work in the future.

Poor regulatory oversight leads to poor compliance. National evidence shows that voluntary compliance does not work to achieve cleanup goals. Without enforcement, the storm water controls in place in Butte are meaningless.

It is a simple cost/benefit analysis. For example, contractors can ignore the regulations and it costs them nothing other than perhaps a lecture on voluntary compliance. Why comply? Complying costs money. Non-compliance costs nothing.Why act contrary to self-interest when there is no penalty attached for non-compliance?

I am still shocked at EPA's lack of will to enforce existing storm water runoff controls in Butte.

I would offer the following as my general suggestions as to how to remedy the storm water runoff control problem in Butte.

Uncontrolled, storm water runoff is a major threat to the quality of the Silver Bow Remediation under Superfund.

1. EPA and Butte/Silver Bow admit that the enforcement of storm water control requirements has not been effective.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

2. EPA declares its clear intention to enforce storm water runoff control requirements in the future. If Butte/Silver Bow is to remain as the primary "enforcer" of storm water runoff controls, there needs to be close supervision of Butte/Silver Bow's enforcement efforts.
When this enforcement is lax or non-existent, as has been the case in the past, local government is held accountable and required to enforce the controls.

3. The Five Year Review should address the following specifics:

a. Conduct an inventory of present problematic storm water runoff sites in Butte. This does not have to be an exhaustive inventory such as, for example, an historic properties condition inventory. It can consist of driving around and noticing problematic sites. Presently EPA and MDEQ officials in Butte have a pretty good idea of where the problems lie. The problem is these sites have been largely ignored.

b. Once these problematic sites are identified, BSB is notified and told to fix them or see that they are fixed. If, for example, the problem is due to a contractor not following best management practices, BSB will contact that person, indicate the nature and extent of the problem and set up a deadline and protocol for addressing the problem. BSB will monitor compliance. If compliance is lacking, enforcement will occur. Of course, given BSB's poor record in the past, EPA will have to monitor BSB, closely and vigorously.

c. At the planned weekly meetings, BSB will report on progress and indicate what are the next steps in their enforcement.

d. Of course, voluntary compliance is best. However, if the offending party, contractor, home/property owner, etc. has not complied on a voluntary basis with the storm water runoff control requirements, sanctions will be employed.

e. The EPA needs to make sure that BSB has its own house in order. By that I mean that many of the problematic storm water runoff control sites are OWNED by Butte/Silver Bow. This cannot be tolerated in the future. Particular attention at the weekly meetings needs to focus on what BSB has done or plans to do to clean up its own mess.

f. A compliance officer needs to be designated by EPA. That would be someone who has responsibility for making sure that storm water controls are being implemented.

g. The public needs to be enrolled to help. By that I mean the public should be encouraged to report storm water runoff control problems to the appropriate EPA official. The local government's point person on storm water runoff controls should also be identified and made known to the public.He/she should inform EPA of reports of violations or problems.

h. Public outreach should be part of the solution. Home and property owners as well as contractors should be educated about the problem of storm water runoff and ways that they, as individuals can help fix the problem. Groups such as CTEC, CFWEP and CPR and the landlords association, to name a few, should be involved.

i. The process of storm water runoff controls enforcement needs to be transparent. The public needs to be informed about what is being done to fix the problem. BSB needs to issue publicly available progress reports.

j. To enhance public involvement, an ad hoc storm water runoff citizens group should be created to hold EPA, MDEQ and BSB accountable.

k. If BSB needs additional resources, they will be provided.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

l. If MDEQ is truly EPA's partner in the Superfund cleanup, MDEQ needs to be more proactive and less passive.

The above are just a few suggestions. As long as EPA relies on BSB to enforce storm water controls, EPA needs to monitor what local government is doing. The lax approach of the past on EPA's part has not worked. If local government fails to enforce the necessary storm water controls, EPA needs to hold local government accountable. There needs to be a change. EPA needs to back up its verbal support of an effective cleanup with deeds to enforce storm water controls. Voluntary action will only get us so far. Enforcement is also necessary. BSB is not going to fix the problem on its own initiative. EPA needs to step into the situation. We have a waste in place remedy for Butte. This remedy will "work" only if the waste actually stays in place, not if it is washed into Silver Bow Creek.

Concluding Statement Regarding My Position/Concerns on Stormwater Runoff

When it rains or the snow melts in Butte, stormwater runoff occurs. As this water flows over Butte's landscape, large amounts of toxics from past mining as well as other pollutants from land, streets, driveways and sidewalks flow into Butte's drain system and go untreated into Silver Bow Creek. Stormwater runoff is the main source of ongoing pollution of Silver Bow Creek. Unmitigated stormwater runoff is a significant threat to the Superfund cleanup of Silver Bow Creek.

Recently, the EPA has announced several major projects to control stormwater runoff. These projects hide the EPA's utter failure to address Butte's stormwater runoff in the past and will do little to solve the problem. The problem of stormwater runoff in Butte exists because the EPA has failed to enforce clearly mandated stormwater control regulations. This problem has gone on unaddressed for years and a couple of showpiece projects are not enough.

You don't have to look at persistent problems meeting water quality standards, seeing the extent of the problem is easy. All one has to do is drive around uptown Butte after a rain storm and you can see the yellow, contaminated soil and other debris flowing into Butte's storm drains, flowing untreated into Silver Bow Creek.

EPA has delegated to Butte's local government the task of implementing and enforcing these stormwater control regulations. Many of the most problematic stormwater properties are actually owned and controlled by Butte's local government. Why can't local government tend to its own property? The local government has not been up to the task of implementing stormwater controls, EPA knows that local government is not enforcing the regulations and EPA does nothing about it. Is this lax enforcement by local government because of a lack of money or a lack of personnel or a lack of will? The reason for lax enforcement doesn't matter. What matters is that the EPA has become ossified in its cleanup efforts and has failed to enforce the stormwater control mandates in place.

Although the EPA can delegate to local government the task of enforcing the controls, ultimate authority and responsibility for the quality of the cleanup remains with EPA. The EPA admits

there are problems but fails to articulate a solution. What is stopping EPA from enforcing these stromwater runoff controls? Why isn't Butte's local government being held accountable for not enforcing the stormwater runoff controls?
While having construction projects to address the issue is important, these projects are no substitute for enforcing the storm water runoff controls currently in place.

The EPA has said it will continue to rely on voluntary compliance and "education" to achieve storm water runoff control.

Nationally, as the EPA's Office of the Inspector General has determined, voluntary controls that rely on "education" do not work to significantly solve environmental problems. The voluntary approach has not worked in the past in Butte and there is no reason to conclude that it will work in the future.

Poor regulatory oversight leads to poor compliance. Without enforcement, the storm water controls in place in Butte are meaningless.

It is a simple cost/benefit analysis. For example, a contractor can ignore the regulations and it costs them nothing other than perhaps a lecture on voluntary compliance. Why comply? Complying costs money. Non-compliance costs nothing. Why act contrary to self-interest when there is no penalty attached for non-compliance?

I ask EPA to implement the following suggested solution:
1. **Conduct an inventory of present problematic storm water runoff sites in Butte.**
2. **Once these problematic sites are identified, BSB is notified and told to fix them or see that they are fixed.**
3. **At weekly meetings, BSB will report on progress and indicate what are the next steps in their enforcement.**
4. **If voluntary compliance does not work, the controls will be enforced.**
5. **The EPA needs to make sure that BSB cleans up its own property.**
6. **The public needs to be enrolled to help.**
7. **The process of storm water runoff controls enforcement needs to be transparent.**
8. **To enhance public involvement, an ad hoc storm water runoff citizens group should be created to hold EPA, MDEQ and BSB accountable.**
9. **If BSB needs additional resources, they will be provided.**

The situation seems simple to me:
1. Storm water runoff from Butte Hill in Butte, Montana goes through drains and ends up, untreated, in Silver Bow Creek.

2. This storm water runoff is contaminated with heavy metals as well as other toxics.

3. EPA regulations are in place in Butte to control storm water runoff.

4. EPA has designated the Butte/Silver Bow local government as EPA's agent to enforce storm water runoff control regulations.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

5. By the EPA's own admission, Butte/Silver Bow has not been enforcing the storm water runoff controls.

6. As a result, the Superfund remedy for Butte, Montana is being adversely impacted.

All I am asking is that EPA enforce or see to it that Butte/Silver Bow enforces the storm water runoff controls that are in place. I am not asking anything new. All I ask is: Enforce what you said you would enforce.

While voluntary compliance is laudatory, voluntary compliance has not worked and does not work in Butte. Consider that many of the problematic properties are owned or controlled by Butte/Silver Bow local government, the very agent that EPA Montana has designated to enforce storm water runoff controls. **If the EPA's agent Butte local government can't comply, why expect that citizens or businesses will comply.**

Unenforced regulations and requirements are meaningless.

I don't really see why this should be a controversial issue. EPA should enforce its own regulations.

I look forward to hearing from the Montana Office under the auspices of this Five Year Review that they will enforce storm water runoff control regulations. I hope that I do not get some all purpose answer that we are looking into the problem and will address it in the future. Citizens deserve an agency that is more responsive to citizen input than that.

I included in regard to the current Five Year Review the following response to the Montana Office of EPA's stated position:
Thank you for your letter of September 23, 2014 which responds to a couple of the points I raised in earlier complaints and a couple of the questions that I asked earlier. I am still waiting for responses to the bulk of my concerns from EPA national headquarters, Region 8, Montana Office of EPA, MDEQ and Butte/Silver Bow. I am tired of perfunctory letters that simply seek to placate the public with platitudes about being patient and about not worrying, all is fine. Citizens deserve better from government officials.

While the agencies might find public input, particularly when it is in the form of complaints irksome, the agencies still have a duty to respond to public inquiry. So far your brief letter of 9/23/2014 and a brief email from Sara Sparks attesting to problems regarding to the implementation of storm water runoff controls as mandated under the BPSOU Remedy as well as Unilateral Administrative Order are the **only** answers I have received to numerous, well documented, emails.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

MDEQ and Butte/Silver Bow have been MUTE!!!!! I intend to pursue this lack of responsiveness from BSB officials separately. There is no excuse for them ignoring citizen questions.MDEQ is usually responsive to public concerns but not on this issue. MDEQ is EPA's "partner." Is MDEQ EPA's "silent partner?"

Let me now consider the specifics of your September 23, 2014 letter:

There is incontrovertible evidence that, particularly during acute storm water runoff events in Butte, water quality standards are exceeded for Silver Bow Creek. The last Five-Year Review says so. Interim studies say so. MDEQ reports say so. Statements from EPA officials say so. Obviously, there is spotty, at best, enforcement. All one has to do is drive around uptown Butte and you will see a plethora of problematic properties, many of which are owned or controlled by Butte/Silver Bow, after a storm water event.

To say that water quality is improving is good but insufficient. Water quality standards are not being met after acute events. Your argument is like saying that because murder rates have improved, we should be satisfied. When will the problem be fixed? When will it be the case that acute storm water runoff will not cause water quality standards to be violated? What is being done to fix the problem? Your letter is very short on specifics. So far what you are doing has had problems, as Sara Sparks said. What will be done differently in the future?

Your letter refers to regulations and requirements regarding storm water runoff controls being in place. Simply having them in place is meaningless unless they are enforced. It is not the requirements that are problematic. It is your refusal to enforce these rules and regulations that is problematic. You mention penalties available for non-compliance. Have any penalties ever been applied or assessed against any party? If so, against whom and when? For how much?

You mention weekly meetings at which storm water runoff problems are discussed. Are these meetings open to the public or the press? If not, why not? We are talking about meetings that MDEQ and BSB attend. MDEQ and BSB are subjected to Montana's open meeting laws. Are minutes taken at these meetings? If so, are they available to the public and press? If not, why not?

You allude to specific EPA oversight. What specific oversight by EPA has taken place? Can you provide any specific examples of EPA oversight that resulted in a problem being fixed?

These are still outstanding issues to which perfunctory answers are insufficient. The public deserves more than being put off with pious pronouncements of progress.

Earlier I submitted a specific plan for addressing the problem of storm water runoff in an efficacious manner. **I have heard nothing back about it. So I submit it again to you.**

I would offer the following as my general suggestions as to how to remedy the storm water runoff control problem in Butte.

Uncontrolled, storm water runoff is a major threat to the quality of the Silver Bow Remediation under Superfund.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

1. EPA and Butte/Silver Bow admit that the enforcement of storm water control requirements has not been effective.

2. EPA declares its clear intention to enforce storm water runoff control requirements in the future. If Butte/Silver Bow is to remain as the primary "enforcer" of storm water runoff controls, there needs to be close supervision of Butte/Silver Bow's enforcement efforts.
When this enforcement is lax or non-existent, as has been the case in the past, local government is held accountable and required to enforce the controls.

3. Specifics:

a. Conduct an inventory of present problematic storm water runoff sites in Butte. This does not have to be an exhaustive inventory such as, for example, an historic properties condition inventory. It can consist of driving around and noticing problematic sites. Presently EPA and MDEQ officials in Butte have a pretty good idea of where the problems lie. The problem is these sites have been largely ignored.

b. Once these problematic sites are identified, BSB is notified and told to fix them or see that they are fixed. If, for example, the problem is due to a contractor not following best management practices, BSB will contact that person, indicate the nature and extent of the problem and set up a deadline and protocol for addressing the problem. BSB will monitor compliance. If compliance is lacking, enforcement will occur. Of course, given BSB's poor record in the past, EPA will have to monitor BSB, closely and vigorously.

c. At the planned weekly meetings, BSB will report on progress and indicate what are the next steps in their enforcement.

d. Of course, voluntary compliance is best. However, if the offending party, contractor, home/property owner, etc. has not complied on a voluntary basis with the storm water runoff control requirements, sanctions will be employed.

e. The EPA needs to make sure that BSB has its own house in order. By that I mean that many of the problematic storm water runoff control sites are OWNED by Butte/Silver Bow. This cannot be tolerated in the future. Particular attention at the weekly meetings needs to focus on what BSB has done or plans to do to clean up its own mess.

f. A compliance officer needs to be designated by EPA. That would be someone who has responsibility for making sure that storm water controls are being implemented.

g. The public needs to be enrolled to help. By that I mean the public should be encouraged to report storm water runoff control problems to the appropriate EPA official. The local government's point person on storm water runoff controls should also be identified and made known to the public.He/she should inform EPA of reports of violations or problems.

h. Public outreach should be part of the solution. Home and property owners as well as contractors should be educated about the problem of storm water runoff and ways that they, as individuals can help fix the problem. Groups such as CTEC, CFWEP and CPR and the landlords association, to name a few, should be involved.

i. The process of storm water runoff controls enforcement needs to be transparent. The public needs to be informed about what is being done to fix the problem. BSB needs to issue publicly available progress reports.

j. To enhance public involvement, an ad hoc storm water runoff citizens group should be created to hold EPA, MDEQ and BSB accountable.

k. If BSB needs additional resources, they will be provided.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

l. If MDEQ is truly EPA's partner in the Superfund cleanup, MDEQ needs to be more proactive and less passive.

The above are just a few suggestions. As long as EPA relies on BSB to enforce storm water controls, EPA needs to monitor what local government is doing. The lax approach of the past on EPA's part has not worked. If local government fails to enforce the necessary storm water controls, EPA needs to hold local government accountable. There needs to be a change. EPA needs to back up its verbal support of an effective cleanup with deeds to enforce storm water controls. Voluntary action will only get us so far. Enforcement is also necessary. BSB is not going to fix the problem on its own initiative. EPA needs to step into the situation. We have a waste in place remedy for Butte. This remedy will "work" only if the waste actually stays in place, not if it is washed into Silver Bow Creek.

Berkeley Pit

Problems to be Considered during the Five Year Review

1. Failure to respond in a meaningful way to public input.
2. Failure to thoroughly test cleanup technologies for the Pit.
3. Failure to consider and address the problem of scaling due to the release of lime treated water into Silver Bow Creek. Vast amounts of lime are being used and will be used to treat the Pit's water for eventual discharge into Silver Bow Creek. This discharged water will be high in lime which can cause carbonate scaling in Silver Bow Creek. As an analogy, think of the white scum that forms on the bottom of a teapot. Do we want a large section of Silver Bow creek coated with a white scum deposit? Scaling can wreck the cleanup of Silver Bow Creek. EPA says if this is a problem we will deal with it in the future. EPA has called the expression of concerns about scaling alarmist. But after scaling occurs it will be too late.
4. Failure to provide for a margin of error.
5. Failure to look at fresh cleanup technologies.
6. Failure to crucially re-evaluate past decisions.
7. Failure to consider that their estimates/models of what will happen in the pit may be wrong.
8. Failure to address the issue of Pit wall instability as a danger to the remedy. there have been significant landslides in the Pit that have caused the water level to rise. We live on top of an active earthquake area. With such a small margin of error for the Pit's water, should Butte residents feel secure? Should people living below the Pit feel safe? What if a landslide compromises much of the buffer?

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

9. The remedy calls for only a meager sixty foot (1%) margin of error. This is not much when you look at the depth of the water in the Pit. This is not much if you consider the devastation that will occur if the EPA gets it wrong. Why don't we start pumping now? Is it because EPA wants to save British Petroleum money? Far too many of the remedies in the Butte area are driven by cost, not protecting the public's health and the environment.
10. The EPA, in saying that the Pit Plan is a good plan, relies on models and estimates. Do we want Butte's future to depend on models and estimates that can be wrong? The EPA's models have been wrong in the past. For example, the model that EPA used in assessing the environmental impact of the Parrott Tailings on Butte water has been totally discredited

Parrott Tailings

The EPA based its cleanup decision for the Parrott Tailings on a ***model*** which has been thoroughly and completely invalidated. Even so, in an exercise of wanton hubris, the EPA clings to that invalid/discredited model, even in the face of overwhelming evidence from several sources that the Parrott Tailings are a clear and present danger to Butte's already challenged groundwater. The migration of Parrott Tailings water is not conforming to the EPA model. The Parrott Tailing's cleanup decision belies EPA's claim that it bases its decisions on "good science." It seems EPA is more prone to basing decisions on poor guesses. Scarce state restoration dollars will have to be spent to fix the problem.

The focus of the remainder of this paper is on the Five Year Review as it applies to Butte Priority Soils OU.

Given that the EPA's remedy for Priority Soils calls for a "cleanup" that relies heavily on leaving capped waste-in-place and institutional controls, rather than aggressive treatment and/or removal of wastes, the Five Year Review is particularly important. A poorly functioning or implemented remedy will expose citizens to the very threats from toxics of concern that Superfund was supposed to remediate. The threat remains at Priority Soils, but it is EPA's contention that that threat can be managed so as not to affect human health and the environment. Unless the waste-in-place is "managed" properly, the remedy will not protect human health and the environment.

The protectiveness of the Remedy as currently being implemented also depends on the adequacy of the data upon which the health risk assessments were based and the adequacy of the data upon which the action levels were based. As will be shown, **new studies and new data** since the Record of Decision was released show that the original data used for the health risk assessments

and the determination of the action levels was inaccurate, inadequate, incomplete and mischaracterized the health threats and risks at the Priority Soils site. **New studies and new data** call into question the protectiveness of the Remedy currently being implemented at the Priority Soils OU. Assumptions were made without justification. If the data is problematic, all conclusions based on that data are suspect and warrant change and redoing.

Given the high concentration of low-income citizens within the BPSOU, particular attention must also be given to issues related to environmental justice.

The question to be answered by the Five Year Review is: Whether or not the Butte Priority Soils Remedy as currently being implemented is protective of human health and the environment. The question to be answered by this Five Year Review is whether or not environmental justice is being promoted by the implementation of the Priority Soils Record of Decision. **The answer in both cases is a resounding NO!!!!!!!**

As this paper will convincingly demonstrate, the Priority Soils ROD will have be modified in order to successfully address the concerns that I discuss.

Five-Year Reviews—What they are supposed to do.

Despite past EPA practice in Montana, Five-Year Reviews are not supposed to be perfunctory exercises. Let us consider the main guidances found in the EPA's *Comprehensive Five-Year Review Guidance*—EPA 540-R-01-007—OSWER No. 9355.7-03B-P, June 2001. (This is **THE** Guidance document covering Five-Year Reviews. Unless otherwise noted, all page references refer to this document.)

A. Five-Year Reviews need to be conducted when waste is left in place
B. The purpose of a Five-Year Review is: "to evaluate the implementation and performance of a remedy in order to determine if the remedy is or will be protective of human health and the environment. Evaluation of the remedy and the determination of protectiveness should be based on and sufficiently supported by data and observations." (Page1-1) See also: *CERCLA*, Section 121 (c) and 40 *CFR*, Section 300.430(f)(4)(ii).
C. Community Involvement is a significant part of the Five-Year Review process. (See pages 3-2 and 3-3.)
D. The Five Year Review envisions the necessity of supplemental data collection, sampling and evaluation activities. (Page 3-3)
E. Neutral, objective parties "without bias or preconceived views or conclusions about the remedy and the site" should perform the Five-Year Review. (Page 3-5)
F. The Five-Year Review should address certain topics which include:
    a. "Are the exposure assumptions, toxicity data, cleanup levels, and remedial action objectives used at the time of the remedy still valid?" (Page 3-7)
    b. "Has any other information come to light that could call into question the protectiveness of the remedy?" (Page 3-7)

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

c. "A determination of whether (new) issues affect current or future protectiveness." (Page 3-7)
d. "List of any recommendations, including follow-up actions to ensure protectiveness." (Page 3-7)

G. The Five-Year Review process is supposed to identify whether or not "there are problems with the remedy that could ultimately lead to the remedy not being protective or suggest protectiveness is at risk." (Page 4-1)
H. The Five-Year Review should consider whether "other actions (e.g. removals) are necessary to ensure that there are no exposure pathways that could result in unacceptable risks." (Page 4-1)
I. The Five-Year Review should consider: "whether new human health or ecological exposure pathways or receptors have been identified." (Page 4-2)
J. ***Very importantly***, the Five-Year Review should consider whether "new contaminants or contaminants sources have been identified." (Page 4-2)
K. The implementation status of institutional controls needs to be considered. (Page 4-3) This includes whether or not institutional controls are incomplete, inadequate or unworkable. (Page 4-10)
L. If necessary, new risk assessments should be conducted. "In some cases, it may be necessary to revise or expand the previous risk assessment as part of your five-year review." (Page 4-7)
M. The Priority Soils remedy uses site-specific cleanup levels. "If the remedy is intended to meet site specific. . . cleanup levels, you should check to see whether toxicity or other contaminant characteristics used to determine the original cleanup level have changed. If there have been changes in the understanding or in our knowledge of these physical/chemical characteristics, you may need to recalculate risk. . . ." (Page 4-7) It is clear that cleanup is not a frozen process but changes to meet new conditions. (Page 4-80)
N. RAOs (Remedial Action Objectives) may be modified as a result of the Five-Year Review process. (Page 4-8)
O. RAOs need to be evaluated as to whether or not they are "sufficiently comprehensive to cover new or changed conditions at a site." (Page 4-9)
P. Five-Year Reviews need to consider whether or not risks have been sufficiently addressed at the site. (Page 4-9)
Q. If needed, the agency should be open to conducting "additional studies or investigations" in order to optimize the remedy. (Page 4-12)
R. Remedies need to be modified if they are not protective, based on incomplete or inadequate data and/or unworkable. (Pages 4-13 and 4-14)

Another document of significance is:
EPA, *Five Year Reviews, Frequently Asked Question (FAOs) and Answers*, OSWER 9355.7-21.

In this document we find additional information as to what is involved in a Five-Year Review and that Five-Year Reviews are supposed to be a proactive processes.

1. *Remedy optimization opportunities typically identify modifications to the operating remedy which may improve remedy performance*. . . . (Page 8)

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

2. *In Question B of the Technical Assessment section of the five-*year *review report, the toxicity data evaluation done in the risk assessment should be reviewed to ensure that any assumptions made at the time of the original risk assessment continue to be protective. In addition to reviewing the toxicity information form the original risk assessment, Regions generally should evaluate new toxicity information for other chemicals identified at the site. New toxicity information my result in the determination that the additional contaminants sources poses a risk to human health or the environment. The review of both the original risk assessment and any new site contaminant information is intended to ensure that the implemented remedy continues to be protective both currently and in the future. (Page 9)*
3. *When conducting the five-year review, it is appropriate to evaluate whether any new information comes to light that could call into question the protectiveness of the remedy. (Page 10)*
4. *The goal of the recommendation, and associated follow-up actions, generally is to ensure both current protectiveness and long-term protectiveness of the implemented remedy. (Page 11)*

The overall question the Five Year Review is supposed to answer is: Does the remedy protect human health and the environment?

If the Montana Office is going to be true to their own agency requirements in conducting a Five-Year Review, it is clear that that review will need to be more than a perfunctory process. If the Remedy for Priority Soils is not meeting the above requirements, if new information has come to light, if the remedy is based on incomplete, inaccurate or inadequate characterization of the toxics of concern, if the remedy is not protective of human health and the environment, it should be modified so as to be fully protective of human health and the environment. Remedy evaluations are supposed to fix Remedy implementation problems that compromise the remedy now and in the future. As I will show, there is strong warrant for significant modifications of the Priority Soils Record of Decision.

Also, by extrapolation, environmental justice issues must permeate the Five-Year Review process given that the Office of Solid Waste and Emergency Response [OSWER] in their *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* mandates that "Environmental Justice issues should be considered at all stages of policy guidance and regulation development, beginning with preliminary efforts" and that environmental justice should be integrated into all agency actions. (OSWER Directive 9200.3-18FS, EPA540/F-95/023) EPA Administrators have consistently defined environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, ***implementation, and enforcement*** of environmental laws, regulations, and policies."

The following are issues/topics of concern regarding the BPSOU Remedy as currently being implemented.

Significant Toxics of Concern, which EPA admits are present at the BPSOU site, have not been adequately characterized or evaluated. Due to this inadequacy, the Remedy as

currently being implemented can provide no assurances that the public health or the environment will be protected.

a. Metals/elements of health and environmental risk such as aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium, while present, according to the EPA, at the BPSOU site, are not considered under the Remedy, nor have these contaminants of concern ever been assessed by EPA as to the threat to human health that they pose. Yet, these metals **do pose**, according to the EPA, a risk to human health and the environment that mandates that they be assessed and remediated. EPA admits there is a threat in place but does not remediate that threat to human health and the environment under the Remedy as currently being implemented. In short the Remedy as currently being implemented is based on an incomplete, inadequate assessment and consideration of all the potential metals/elements/contaminants of health and environmental risk. In terms of the BPSOU, no comprehensive health risk assessments have been conducted pertaining to the metals/elements of health and environmental risk that are identified in the above part of this section—aluminum, mercury, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium. Exposure data pertaining to the metals/elements of health and environmental risk (aluminum, mercury, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium) is insufficient. Pathways of exposure regarding these above-mentioned metals/elements of health and environmental risk have not been identified. Given that the adequacy of this Remedy as currently being implemented must be judged in terms of whether or not it will help achieve the goals of Superfund, which are to protect human health and the environment, a reasonable person could conclude that that this Remedy as currently being implemented is based on, at best, incomplete/inadequate data and ignores significant areas of threat to human health and the environment. Therefore, this Remedy as currently being implemented is inadequate in protecting human health and the environment from known contaminants of concern.
b. The Remedy as currently being implemented rests on the unproven assumption that if you remediate lead and arsenic you will automatically remediate the above listed contaminant/metals/elements of health and environmental risk. For example, can we assume that if lead levels drop, exposure to other heavy metals will also drop in a similar way? Does remediating mercury assure that cadmium levels will also drop? The EPA provides no information warranting such a conclusion. While the EPA says that its decisions are based in "good science," how good is their science when it is based on missing, incomplete and inadequate data? If the data is faulty, what flows from that data is also faulty. *The relationship between lead and other metals concentrations in outdoor soil is not evaluated in any detail.* (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 15, 2009)
c. The Remedy as currently being implemented fails to consider the synergistic affects of the contaminants/metals/elements of health and environmental risk on human health. It is known that synergistic interaction does occur but this synergistic interaction was never evaluated.
d. The Remedy as currently being implemented fails to deal with bioaccumulation of the metals/elements of risk and toxics of concern.

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

e. The Remedy as currently being implemented fails to deal with the cumulative effects of exposure to these contaminants/toxics of concern.
f. The Remedy as currently being implemented fails to consider the chronic effects of exposure to arsenic, mercury and all of the other toxics of concern. Consider:
    1. *Blood and urine samples indicate acute arsenic exposure while tests of hair and fingernails indicate chronic arsenic exposure.*
    2. *Epidemiological assessments have identified high cancer prevalence in the Butte area for arsenic related types of cancer, implicating exposure to arsenic and other constituents in mine waste as a cause.*
    3. *Prior bioavailability work, which strongly influenced cleanup levels, failed to consider relative bioavailability for the diverse types of sources such s attic dust, house dust, or sufficient numbers and varieties of soil types in the Butte area. Relying upon soil cleanup level for lead and arsenic and lead biomonitoring only will not ensure protection from excessive exposure to arsenic and other metals.*
    4. *Prior bioavialability work also does not consider the effect of exposure to multiple chemicals, as is the case in Butte.* (Steve Ackerlund, CTEC Position on Butte Area Soils Cleanup Program, Draft, June 25, 2009)
g. The site-specific bioavailability data that the Remedy as currently being implemented was extrapolated from the Anaconda Smelter Superfund site. No justification for doing this has ever been provided. Specific bio-availability of indoor dust and attic dust have never been adequately addressed. (See: Summary of Risk Assessment Reviews—Steve Ackerlund—Draft—June 3, 2009) *In particular, the applicability of these 'site-specific' values to indoor dust and attic dust has not been evaluated.* (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 15, 2009) For example, the characteristics of attic dust may well mean that it is very bioavailable. Yet, the EPA failed to evaluate this. *Regarding bioavailability, the generalized estimates made for the entire BPSOU may not apply to specific locations, and the potential for error is larger when the 'site-specific' bioavailablity factor used is very much to the low end of typically values. In particular, the applicability of these 'site-specific' values to indoor dust and attic dust have not been evaluated.* (Steve Ackerlund—Draft Memorandum to CTEC Membership, September 24, 2009)
h. The EPA provides no justification for assuming that using lead level data can accurately lead to protective arsenic and mercury exposure action levels.
i. There are elevated cancer rates in Butte of the type of cancers related to exposure to mine waste. Such a finding is ignored by the EPA. If the current Remedy was working, these cancers would be decreasing.
j. By only considering only arsenic, lead and cadmium, the Priority Soils remedy as currently being implemented fails to sufficiently protect public health because it neglects other metals/contaminants of concern.
k. The Remedy as currently being implemented fails to consider the fact that children are particularly at risk from all the pollutants found in Butte Priority Soils, not just lead, mercury and arsenic. Action levels that may be protective for adults are not necessarily protective of children. Of course, the EPA has conducted no investigations of the effects of aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium on children within the BPSOU. Are BPSOU children

somehow mysteriously immune to the health effects of aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium?

l. The tests used to detect arsenic contamination rely on urine studies that do not show the long-term, chronic affects of exposure to arsenic. Hair and fingernail studies give a much more comprehensive view of long term, chronic exposure to arsenic. Relying on urine sample fails to give a comprehensive picture of the degree of long-term exposure to arsenic that residents of the BPSOU have had to endure. Studies of the chronic effects of exposure to arsenic tend to show a much more significant problem. (*For example, Dr. Holly Peterson and Stacie Barry, MTech, completed an EPA-funded biomonitoring project that evaluated arsenic exposure in domestic pets and other sentinel species. This project went through a rigorous quality assurance, peer review, and publication process by the MTech Mine Waste Technology Program, the MSE Mine Waste Department, and the EPA. The study result indicate an increased risk of exposure to several mining related contaminants, including arsenic, and it suggests that exposure to humans may also be occurring. The results of this study are potentially conflicting with an exposure investigation conducted by ATSDR in 2000, which showed non-detectable arsenic exposure in Walkerville. However, the Walkerville study had a small sample size, was conducted during the winter when all exposure pathways are not well represented, and did not show exposure to elevated blood-lead such that no relationship of exposure between the two metals can be determined. While definitive studies on elevated arsenic exposure to Butte area residents are lacking, an ATSDR Health Consultation conducted in 2001 does show higher rates of cancer in Butte area residents compared to Montana overall.* [Steve Ackerlund—Draft Letter to John Wardell and Richard Opper—August 4, 2009]

m. The Remedy's assessment of mercury was based on an early study of Walkerville that had significant uncertainties.

n. The Remedy as currently being implemented fails to give special consideration to the differential health effects of heavy metals exposure and other contaminants of concern—mercury, arsenic, lead, aluminum, cadmium, copper, iron, silver, zinc, boron, lithium, manganese, molybdenum and selenium—on low income populations, thus ignoring the EPA's environmental justice mandate. Given that low income citizens tend have poorer health than the non-poor, the EPA should have, but did not, investigated the differential effects of exposure to contaminants of concern on the low-income population of the BPSOU.

o. The Remedy as currently being implemented is based on an inadequate health risk assessment process in that many elements/contaminants of concern were never subjected to a health risk assessment and the three drivers—lead, mercury, and arsenic—never underwent a comprehensive health risk assessment. Mercury was particularly neglected in this concern. Arsenic was extrapolated from the Anaconda site and little unique work was done in Butte. Action levels were arbitrarily set with different action levels at different sites for the same contaminant. Are we to assume that somehow the toxicology and epidemiology related to toxic elements differs from one adjacent area to another? Is arsenic in Anaconda different than arsenic in Butte? Does Butte have a special kind of lead or mercury? Are the people of Anaconda somehow biologically different than the people of Butte or Missoula or East Helena?

Resident #6 Comments: Issues/Topics of Concern—Five Year Review (Continued)

The Remedy as currently being implemented fails to recognize that the arsenic in attic dust did come from smelting operations in the Butte/Anaconda area. Because the attic dust did come from mining related activities, it is directly under the purview of Superfund.

The public involvement plan pursuant to the remedy as currently being implemented needs some benchmarks by means of which success of public outreach is evaluated. At present, there is no way to determine whether or not the community involvement component which is critical for the success of the Remedy as currently being implemented has been successful. What would be considered a successful public involvement/educational plan? We have no way of knowing what constitutes success or failure. Overall, the Remedy, as currently being implemented, presents a very sketchy community involvement plan. Yet, the success of the Remedy as currently being implemented depends on effective community outreach.

It is problematic as to whether the education/community involvement program mandated under the remedy as currently being implemented will reach populations of concern, particularly low-income citizens. Given the Montana EPA track record regarding community involvement in the BPSOU, which has been limited to the traditional/formalistic/ineffective format of formal agency conducted public hearings and informational meetings along with some agency produced written materials, there is little to suggest that target populations, particularly low-income citizens, will be reached and/or motivated to participate in the program. This is contrary to the EPA's Community Involvement policies, rules, regulations and guidance documents. For example, EPA has an environmental justice mandate to be pro-active in attempting to involve low-income citizens in their programs.

The BPSOU Remedy as currently being implemented fails to recognize and accommodate the unique health problems of low-income citizens thus failing to meet EPA's environmental justice mandate. Furthermore, the Plan fails to take into consideration the substandard housing, poor diet and other environmental factors affecting the poor in relation to toxic metal exposure.

There is no assurance that the majority of problematic properties will be identified. There are problems related to absentee landlords, property owners, etc. There are problems in that, if there is no application for a building permit prior to renovation, that kind of property may be ignored.

Given the voluntary nature of participation in the medical monitoring program, what assurances are there that the vast majority of the affected population will be identified and screened?

The Remedy as currently being implemented still mistakenly puts the onus on the property owner or renter or resident to initiate remediation. Such an onus is particularly burdensome to low-income residents. Past experience amply demonstrates that such an approach is not efficacious.

It is not clear and actually very problematic that that there will be enough money to accomplish a comprehensive remedy.

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The Remedy as currently being implemented still relies on a non-protective pathways of exposure argument regarding the abatement of attic dust.

DISCUSSION

The plan still insists that attic dust will not be remediated unless a pathway of exposure is present.

The contaminated dust found in many BPSOU attics poses a direct threat to human health if people were to be exposed to these contaminants.

The dust obviously entered the attics. What enters can leave, if disturbed. Saying that no pathways of contamination currently exist does not provide any permanent remediation of the threat of toxic attic dust. New and expanded Pathways of exposure can be created by:

a. Remodeling and Painting
b. Use of the attics for storage
c. Weatherization
d. Deterioration of ceilings.
e. Damage or deterioration of roofs.
f. Modifying the attic through such measures as adding electrical wires, skylights, ceiling fans, electric lights or working on the roof.
g. Fires
h. Subsidence and cracking
i. Cleaning
j. Wind, rain, hail and or water from storm events.

2. The pathway argument rests on the failed premise that remediation should attempt to keep people from contaminants rather than remove the contaminants from people.
3. The pathway argument directly contradicts the Superfund requirement for permanent solutions in that human behavior patterns, residential use patterns, and general land use patterns change over time.
4. There exists no current law, rules, or regulations that would prohibit the owner of a home or the renter of a home from using or disturbing the home's attic.
5. The pathways argument is contrary to the principles of environmental justice in that this approach means that low-income citizens will continue to bear a disproportionate toxic burden.
6. The pathways approach is contrary to the principles of the Superfund Redevelopment Initiative and the Superfund Land Revitalization Action Agenda in that it limits or precludes future productive land uses and redevelopment of sites contaminated with toxic attic dust.
7. The pathways argument is directly contrary to the Principles of Pollution Prevention and the Precautionary Principle, which are embraced by EPA policy, rules and regulations, as well as Montana State Law.
8. The Libby Cleanup Precedent would warrant addressing contaminated attic dust in Butte.

The Remedy as currently being implemented does not adequately address many metals and mining related toxics of concern and potential risk to the public.

By the EPA's own account (BPSOU ROD), in addition to lead, arsenic and mercury, copper, aluminum, cadmium, iron, silver and zinc are also toxics of concern presently found within the BPSOU. Other studies have found boron, lithium, manganese, molybdenum and selenium to be metals/elements/toxics of risk present at the BPSOU site. (Holly Peterson, 2007. *Domestic Pets as Biosamplers of Mining Related Contaminants*, EPA Mine Waste Technology Program, Butte, Montana.)

The Remedy as currently being implemented fails to address these other toxics of concern and risk. I suppose that the assumption is made that if we remediate arsenic, lead and mercury, we will "get" all of these others also. However, there is no substantiation for this claim, the EPA just assumes it. Nor is there any consideration of the synergistic effects of these toxics of concern on human health. Nor is there any consideration of the bioaccumulation of these toxics of concern. Nor is there any consideration of the cumulative effects of chronic exposure by humans to these toxics of concern. (For example, given the reliance on urine sampling to measure arsenic exposure, the EPA probably never would be able to assess the cumulative effects of chronic exposure to arsenic.) Nor has there been an adequate health risk assessment of mercury exposure within the BPSOU. The harmful health effects of the above listed toxics of concern are amply discussed and demonstrated in Stacie Barry's *Toxicology of the Chemical of Concern in Butte, Montana*: Submitted to the Butte-Silver Bow Health Department, June 5, 2008.

In short, the current proposed the Remedy Plan as currently being implemented fails to consider all the potential threats to human health and the environment within the Butte Priority Soils OU in that it neglects many elements with are risky for human health and the environment. Faulty and incomplete data and conclusions based on unsubstantiated assumptions can only compromise the effectiveness of any plan based on such data.

Arsenic found in BPSOU and areas adjacent to the BPSOU is from smelter activities in Butte and Anaconda and, therefore, is directly under the Superfund purview.

Direct Evidence of Causal Link to Mining and Smelting

There is strong evidence that a significant amount of the trivalent arsenic present in attics in the homes in the BPSOU as well as adjacent to the BPSOU came, in large part, from the Anaconda Smelter. The geomorphology and chemical composition of the arsenic contaminated attic dust from the Anaconda Smelter and the geomorphology and chemical composition of the arsenic contaminated attic dust found in homes both within and adjacent to the BPSOU are the same. The arsenic attic dust is smelter arsenic dust. The EPA must stipulate that the arsenic attic dust is smelter arsenic dust.

The prevailing wind patters in Southwestern Montana clearly indicate that the prevailing winds flow from the Anaconda Smelter to Butte—hence a plume of trivalent arsenic contamination could have reached the Butte Hill. According to the National Oceanic and Atmospheric

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Administration—National Climatic Data Center, the prevailing winds are generally from Anaconda to the Butte area along the I-90 Corridor and are sufficiently strong enough of the time to carry contaminated smelter dust to Butte. A weather chart from the National Weather Service in 1920 shows essentially the same wind directions as today from Anaconda to Butte.

Additional support comes from the U.S. Forest Service, which in their various Forest Fire Suppression Documents and Reports, notes that the typical wind direction is from west to east as can be readily seen by the extent of smoke and particulate matter in the Butte area from fires occurring west of Butte. Ash from forest fires is denser and heavier than airborne particulate matter from the Anaconda smelter. The EPA Superfund ROD for the Anaconda Smelter (09/30/1996) also notes that the prevailing wind pattern is from west to east with most arsenic and heavy metal contamination found east of the Smelter stack.

The Final Risk Assessment-BPSOU Baseline Human Health Risk Assessment for Arsenic, April 29, 1997 notes: "Aerial emissions from the mills and smelters, **as well as the Anaconda Smelter**, also contributed to the BPSOU." (p. 1-2, emphasis supplied.)

It is important to note that inorganic, trivalent arsenic contamination releases result from the ore smelting process. (See: Paul F. Holt, *Inhaled Dust and Disease*, (New York: John Wiley and Sons, 1987. See also: *Arsenic* (ATSDR)"While arsenic is released to the environment from natural sources such as wind-blown dirt and volcanoes, releases from anthropogenic sources far exceed those from natural sources." (ATSDR) Mining and smelting are major causes. "The soil receives arsenic from a variety of anthropogenic sources, including. . . smelting operations, mining wastes. Mine tailing and smelter slag was estimated to add an additional, 200-11000 and 4,500 –9000 metric tons respectively. . . .abandoned mine tailings add still more."

Indirect Evidence of Causal Link to Mining and Smelting
There is no other possible source of the contaminated attic dust in Butte than the Anaconda Smelter.
Turn of the century and early 20th Century smelters in Butte are not the source of present day attic dust contamination in that contamination is found in homes both within and adjacent to the BPSOU that were built long after these early Butte smelters closed.
Coal burning is not the source of the present day attic dust contamination, as some allege, in that many homes with contaminated attic dust were built long after coal burning had ceased in Butte.
Contamination is not found in attics of homes that were built **after** the Anaconda Smelter closed in 1980.

To the extent that trivalent arsenic is found in the attics of homes constructed after smelter operations ceased on the Butte Hill, the 1920s, there would exist the strong presumption that such arsenic emanated from Anaconda. By the EPA's own assumptions, trivalent arsenic was not characteristic of the arsenic found in Butte soils but is characteristic of the arsenic found in Anaconda.

Conclusion: The Anaconda Smelter would seem to be the only practical source for this trivalent arsenic found in Butte attic dust. What other major source exists? Thus, the presence of arsenic

in BPSOU attics is a direct result of mining activity which contamination is covered by Superfund.

The BPSOU Remedy as currently being implemented fails to recognize and accommodate the unique health problems of low-income citizens thus failing to meet EPA's environmental justice mandate. The public involvement plan also fails to recognize and accommodate the unique problems of reaching low-income citizens thus failing to meet EPA's environmental justice mandate.

I make the following arguments that lead to the clear conclusion that the EPA needs to be more aggressive in attacking the BPSOU toxic attic dust problem. It is a human health issue and an environmental (social) justice issue:

- **A. A significant number of homes in the BPSOU are substandard and deteriorating.**
- **B. A disparate concentration of poor is found living in this substandard BPSOU housing.**
- **C. Many, if not most, of these substandard BPSOU homes are contaminated with toxic attic dust which constitutes a severe threat to human health, particularly the health of children**
- **D. This contaminated and toxic attic dust is found in BPSOU homes as the direct result of mining related activities. Hence, such toxic attic dust is clearly within Superfund's purview.**
- **E. There is a great risk of exposure to toxic attic dust in substandard homes, particularly as compared to homes of good quality.**
- **F. Superfund was designed to remediate these human health threats.**
- **G. Superfund, in remediating human health threats, must also address environmental justice concerns.**
- **H. The concentration of toxic attic dust in the BPSOU raises an environmental (social) justice issue.**
- **I. The EPA's current approach to remediating toxic attic dust in the BPSOU is inadequate in that it will only address the toxic attic dust issue if there is a clear and present pathway of contamination within a home which leads to exposure of inhabitants to the toxic dust.**
- **J. The EPA's current approach to remediating toxic attic dust in the BPSOU violates EPA environmental justice mandate in that it perpetuates a disparate toxics burden on the poor in the BPSOU.**
- **K. Even though the Record of Decision for Priority Soils has been issued, EPA still has the regulatory flexibility and authority to change its approach to remediating toxic attic dust.**
- **L. EPA should change its approach, in the ways suggested in this paper, to more aggressively monitor and remediate toxic attic dust. Failure to undertake these changes would be contrary to the Superfund mandate to clean up sites, to protect human health and the environment and to make sites free of toxics in a permanent manner and would be contrary to EPA's environmental justice mandate.**

The quality of the housing stock in the BPSOU is poor, the housing stock has a disproportionate number of low income citizens living in this housing, this housing stock is contaminated with toxic attic dust, and due to its substandard nature, it is likely that exposure of residents to this toxic attic dust will continue to occur:

1. According to a study commissioned by the Butte/Silver Bow Planning Board, ". . . much of the housing stock in the older town site is in a state of decay. Decay of the housing stock in much of Census Tracts 1 and 2, which encompass the area north of Front Street to Walkerville and the upper and lower west sides of the urban cluster are contributing to a significant aesthetic crisis and have created an economic development barrier for the community. Retail activity in the central business district is inherently impacted by a loss of people, by vacant and blighted structures and by high poverty in these areas." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-5)
2. According to the Center for Applied Economic Research for the Montana Department of Commerce, about 73% of the substandard housing units found in Butte are within the confines of the BPSOU. According to the report, this amounts to 2600 housing units.

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(Quoted in *Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-5)

3. According to the Planning Board sponsored report: "The County's poor population is being isolated in the most blighted areas of the community. The older town site (Census Tracts 1 and 2), which contains an approximated 73 percent of the community's substandard housing units, (2600) units, is also home to 52 percent of people living below the federal poverty line. Living below the federal poverty line indicates people do not have enough resources to purchase the most basic goods and services for survival. Lower income families and individuals are segregated in blighted areas of Butte-Silver Bow; many are living in substandard conditions while paying more than 30% of their monthly incomes for housing costs. Disabled people, many of whom have extremely low incomes, are a subset of the impacted group." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, pp. 2-3 and 4) Note: Butte Census Tracts 1 and 2 are in the BPSOU.
4. Substandard housing disparately affects the poor who live in Butte more than the non-poor.
5. The housing problems in the BPSOU are part of the overall poverty problem in Butte. According to the 2000 Census, 10.7% of Butte families live in poverty, compared to 10.5% across the state. About 15% of the Butte population lives below the poverty line. Also, according to the 2000 Census, close to 25% of Butte families with children under the age of five years have incomes below the official poverty line. Fifty-eight percent of the homes without fathers have incomes below the official poverty line. According to the Montana Department of Public Health and Human Services, in 2002, about 2.4% of Butte's citizens were receiving Temporary Assistance for Needy Families compared to the state average of 1.89%. Over 10% of the Butte population was receiving food stamps compared to 7.56% statewide.
6. Low-Income Renters are a major component of the BPSOU housing occupants. (The percentage of households with incomes less than $25,000 is 42% in Silver Bow County compared with 28% for the nation and 38% for Montana. Further, 41% of families are considered low-income; seventy percent of renters have incomes less than $25,000 and 81% of them are concentrated in Census Tracts 1 and 2 (BPSOU) where there are an estimated 2600 substandard units. Thirty percent of households occupying rental units are experiencing a cost burden by contributing more than 30% of their income to housing costs." *Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-2) 32% of renters in the age range 25-34 have annual income below the poverty level. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 2-1)
7. 30% of children in Butte live in high poverty neighborhoods in the BPSOU. "Silver Bow County ranked first (highest) in Montana in the poverty rate for population under 18 years of age; the percentage of children living in high-poverty neighborhoods (coterminous with the BPSOU); and the average number of food stamp recipients per month." *(Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-40)
8. Deep poverty persists within the BPSOU. 59% of the high poverty block groups in Silver Bow County are found within the BPSOU. The BPSOU area "contains 52% of the

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county's poor while only comprising 29% of the total population. Of particular note are Bock Groups 4 and 5 in Tract 1 where poverty rates were 47% and 61% respectively in 2000." (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-28)

9. Resident flight from the BPSOU is continuing and contributing to the decline and deterioration of the area. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006, p. 1-8)
10. Studies also indicate that the vast majority of the poor live in the area encompassed by Butte Priority Soils. For example, of the 1200 houses in Butte that have had a high risk of lead, the vast majority are in the Butte Priority Soils site. The risk of exposure to contaminated arsenic in attics is much higher in the BPSOU than anywhere else in Butte. The housing stock in the BPSOU is more deteriorated and dilapidated than anywhere else in Butte and is overwhelmingly substandard. Compared to Butte as a whole, the low-income citizens living in the area encompassed by the Butte Priority Soils Operable Unit bear a disproportionate burden of exposure to toxics compared to the rest of the community. Comparing income levels to quantity of toxics present clearly demonstrates that low-income citizens in Butte bear a disproportionate toxics burden. The poor in Butte have a greater risk of cancer from exposure to heavy metals than do the non-poor. Given weakened immune systems which weaknesses are greater in the poor than the non-poor, given inadequate diets which are more prevalent in the poor than the non-poor, given lack of access to adequate medical treatment which is more prevalent in the poor than the non-poor, given the detrimental health effects of living in substandard housing which is more prevalent for the poor than the non-poor, the poor in Butte are more threatened by the release of toxic, heavy metals associated with mining than the non-poor. (See: Environmental Defense Fund, *Summary Report: Silver Bow County*, 11/24/03.)
11. The poor residents of central Butte lack the financial ability to either (1) move into better housing within the district or (2) move out of the BPSOU area into better housing. (*Butte-Silver Bow County Community Development Block Grant Application: Housing and Neighborhood Renewal*, December 8, 2006)
12. Many of these homes have attics that are contaminated with toxic arsenic dust.
13. "The age of the house and the design, construction, and condition of the house structure largely determine the entry of ceiling dust to the living areas of a dwelling. Dwellings in good condition rarely show evidence of ceiling dust entering the living areas of the house. Older dwellings and those in need of repair tend to show more signs of ceiling dust encroachment through cracks and vents." (Jeffrey J. Davis and Brian L Gulson, "Ceiling (attic) dust: A 'museum' of contamination and potential hazard," *Environmental Research*, Volume 99, Issue 2. October 2005, Pages 177-194) These findings are particularly relevant given the generally poor condition of housing stock within the BPSOU.

The conclusions reached by points 1-13 above are:

1. Butte has a high rate of poverty compared to the rest of the nation and Montana.
2. These poor live overwhelmingly within the BPSOU. The "poor-poor," which is a subset of the poor, also live overwhelmingly within the BPSOU.

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3. A major subcategory of the poor and "poor-poor" living within the BPSOU are children, the elderly and the disabled.
4. These poor live in substandard housing within the BPSOU.
5. The poor living in the BPSOU area have a greater level of exposure to contaminated and toxic attic dust than the non-poor.

Next, let us consider the degree of toxic attic dust contamination found in these substandard homes within the BPSOU and the health effects of this contamination.

Regarding the health effects of toxic attic dust found in housing units in the BPSOU, we know the following:

1. Inorganic arsenic, found in attics in the BPSOU, even at low levels of exposure, poses a serious threat to human health. Arsenic has been designated a human carcinogen. Arsenic can cause cancer of the lungs, liver and skin. Long-term exposure to arsenic can cause alterations in mental functions and depression. (*Staying Healthy in a Risky Environment*, New York University Medical Center, p. 365 and 428) Arsenic exposure at low doses can cause nerve damage, cardiovascular problems, skin problems and constitutional complaints such as nausea, diarrhea, gastrointestinal upset, etc. (Johnson and DeRosa, ASTDR, "The Toxicologic Hazard of Superfund Hazardous Waste Sites") [See also: Paul F. Holt, Department of Chemistry, University of Reading, UK, *Inhaled Dust and Disease*, p. 245. which discusses the causative effect of arsenic on heart disease.] Arsenic targets most of the body's organs and is particularly harmful to the gastrointestinal tract and to the skin. Outdoor play is a common arsenic exposure route for children. Attics in the Butte Priority Soils area are contaminated with a host of toxics, in addition to inorganic arsenic, related to past mining/smelting activities.
2. More specifically, the trivalent arsenic found in BPSOU attics is a proven human carcinogen. One form of human cancer directly linked to trivalent arsenic is skin cancer that has above average levels in Butte. (NIOSH, Tenth Report on Carcinogens, *Arsenic Compounds, Inorganic*. See also: International Agency for Research on Cancer, *IARC Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man*, Vols. 2 and 23 and Supplements 4 and 7, USEPA, Integrated Risk Information System, *Arsenic, inorganic* (CASRN 7440-38-2) and Dennis M. Opresko, Ph.D., Chemical Hazard Evaluation and Communication Group, Biomedical and Environmental Information Analysis Section, Health and Safety Research Division, Oak Ridge Reservation Environmental Restoration Program, Risk Assessment Information System, 1997) Not only is trivalent arsenic carcinogenic, even at low doses, [Arsenic exposure at low doses can cause nerve damage, cardiovascular problems, skin problems and constitutional complaints such as nausea, diarrhea, gastrointestinal upset, etc. (Johnson and DeRosa, ASTDR, *The Toxicologic Hazard of Superfund Hazardous Waste Sites*)] but it is also genotoxic. (Mass et al.,*Chem. Res. Toxicol.* 14:355-36, April 16, 2001) The EPA has specifically endorsed this genotoxic conclusion. (April 2001) "Inorganic arsenic is readily absorbed through ingestion and is widely distributed in the human body. It does not need metabolic activation to exert its effect." (Chiou, et. al., *Incidence of transition cell carcinoma and arsenic*, American Journal of Epidemiology 153 (5): 411-418, 2001)
3. Moreover, there are no known safe levels of exposure to inorganic arsenic. Trivalent arsenic bioaccumulates in tissue and is excreted very slowly. (Dr. Ronald Brecher, *Arsenic*, EBI,

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Canada and Aapo Saask, *The Arsenic Challenge*, Scarab Development AB, Stockholm, Sweden) Finally, trivalent arsenic causes a host of other serious medical problems. (Holt, *Inhaled Dust and Disease*, *op. cit.*; Norman Trieff, *Environment and Health*, Ann Arbor Science Publishers Inc.; Graber and Upton, *Staying Healthy in a Risky Environment: The New York University Medical Center Family Guide*; ATSDR; OSHA; NIOSH; and USEPA.)

4. Trivalent Arsenic is one of the major contaminants of attic dust on the Butte Hill. The gross geologic morphology of the attic arsenic dust would lead to that conclusion.
5. There is strong evidence that a significant amount of the trivalent arsenic present in attics came from the Anaconda Smelter.
6. To the extent that trivalent arsenic is found in the attics of homes constructed after smelter operations ceased on the Butte Hill, the 1920s, there would exist the strong presumption that such arsenic emanated from Anaconda. By the EPA's own assumptions, trivalent arsenic was not characteristic of the arsenic found in Butte soils but is characteristic of the arsenic found in Anaconda.
7. The prevailing wind patters in Southwestern Montana clearly indicate that the prevailing winds flow from the Anaconda Smelter to Butte—hence a plume of trivalent arsenic contamination could have reached the Butte Hill.
8. The Final Risk Assessment-BPSOU Baseline Human Health Risk Assessment for Arsenic, April 29, 1997 notes: "Aerial emissions from the mills and smelters, **as well as the Anaconda Smelter**, also contributed to the BPSOU." (p. 1-2, emphasis supplied.)
9. Inorganic arsenic contamination releases result from the ore smelting process such as occurred very early in Butte, ending in the 1920s, and most prominently and recently in Anaconda. (See: Paul F. Holt, *Inhaled Dust and Disease*, (New York: John Wiley and Sons, 1987. See also: *Arsenic* (ATSDR)"While arsenic is released to the environment from natural sources such as wind-blown dirt and volcanoes, releases from anthropogenic sources far exceed those from natural sources." (ATSDR) Mining and smelting are major causes. "The soil receives arsenic from a variety of anthropogenic sources, including. . . smelting operations, mining wastes. Mine tailing and smelter slag was estimated to add an additional, 200-11000 and 4,500 –9000 metric tons respectively. . . .abandoned mine tailings add still more."
10. **Conclusion**: The Anaconda Smelter would seem to be the only practical source for this trivalent arsenic found in Butte attic dust. What other major source exists? Thus, the presence of arsenic in BPSOU attics is a direct result of mining activity which contamination is covered by Superfund.
11. The 1997 Health Risk Assessment for arsenic and subsequent health studies for Butte Priority Soils do not specifically and directly consider trivalent arsenic found in Butte attics. The 1997 Health Risk Assessment for arsenic and subsequent studies only consider the levels of trivalent arsenic found in soil as a potential source of the dust home contamination problem. This is deceptive in that arsenic is water soluble and would have been washed away to a large extent given rain, snow melt, wind, etc. However, the fine trivalent arsenic dust found in attics would not have been washed away by rain and snowmelt. Wind would not have blown away the trivalent arsenic found in attics. It is totally plausible that there would be low level of trivalent arsenic in the soil while having high levels of trivalent arsenic in attics. Arsenic does not lose it toxicity over time.

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The contaminated dust found in many BPSOU attics poses a direct threat to human health if people were to be exposed to these contaminants. The EPA needs to be more pro-active in reaching out to low-income residents who are disproportionately concentrated in the Butte Priority Soils Site. Yet, no provisions occur in the proposed Multi-Pathway Residential Metals Abatement Program Plan for reaching out to, including, and involving low-income citizens in the Multi-Pathway Residential Metals Abatement Program.

Given the concentration of the poor in the substandard housing units of the BPSOU, which are contaminated in a disparate manner with toxic attic dust, the poor bear a disproportionate toxics burden. ***Consider:*** On February 11, 1994, through Executive Order 12898, President Clinton declared that: "each Federal agency shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States." According to the EPA, the President's concern was that: "minority and low-income populations bear a disproportionate amount of adverse health and environmental effects." Today, the EPA further defines environmental justice as "the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, ***implementation, and enforcement*** of environmental laws, regulations, and policies. Fair treatment means that no group of people, including a racial, ethnic, or a socioeconomic group, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal and commercial operations ***or the execution of federal, state, local, and tribal programs and policies***." (Emphasis supplied.) EPA administrator Whitman in August 2001 stated that environmental justice would be an integral part of all EPA programs, policies, and activities. According to Whitman, the goal of the EPA's Environmental Justice program is that no segment of the population, including low-income citizens, suffers disproportionately from the EPA's policies, programs and activities. Furthermore, EPA has a mandate to provide for the equitable distribution of the burden of cleaning up sites. (The Office of Solid Waste and Emergency Response [OSWER] in their *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* mandates that "Environmental Justice issues should be considered at all stages of policy guidance and regulation development, beginning with preliminary efforts" and that environmental justice should be integrated into all agency actions. (OSWER Directive 9200.3-18FS, EPA540/F-95/023)

This above OSWER Directive also mandates that the economic/regulatory impacts of EPA decisions be considered in terms of environmental justice issues. Part of the EPA's environmental justice strategy is to promote a "sustainable economy" in areas affected by EPA rules, policies and programs. For example, OSWER Directive No. 9200.3-17 entitled *Integration of Environmental Justice into OSWER Policy, Guidance, and Regulatory Development* states: "Where environmental justice concerns or the potential for concerns are identified, staff should conduct an appropriate analysis of the issues(s). To the extent practicable, staff should evaluate the ecological, human health (taking into account subsistence patterns and sensitive populations) and socio-economic impacts of the proposed decision document on minority and low-income communities. Examples include how a policy on future land use would impact minority or low-income communities versus non-minority, affluent communities. The analysis should be documented and retained for public availability." (**This has not been done by the Montana Office of**

EPA for Priority Soils.) The point is that the Montana Office of EPA has a mandate to consider how its enforcement/abatement actions will disproportionately and adversely economically affect low-income areas and has a mandate to mitigate disproportionate adverse economic impacts on low-income citizens. (See: *Incorporating Environmental Justice Principles into the CERCLA Process*, May 1998.) Low-income citizens should not bear a disproportionate or undue regulatory burden when it comes to the development of cleanup activities. (EPA, Region 8, *Environmental Justice Action Plan*, April 2003)

The Region 8 of EPA also equates environmental justice with the legal concept of equal protection under the law. In April of 2003, Region 8 issued its *Environmental Justice Action Plan* which mandates that the agency will work with stakeholders to "correct and prevent inequitable environmental and public health impacts to any groups." In short, environmental justice mandates a particular concern with populations, such as low-income populations, that bear a disproportionate burden of environmental degradation and environmental regulations. "Fair treatment means that no group of people, including a racial, ethnic, or social economic group should bear a disproportionate share of the negative . . .consequences resulting from . . .the execution of federal, state, local and tribal programs and policies." (Headquarters Press Release, EPA, *Administrator Whitman Reaffirms Commitment to Environmental Justice*, August 21, 2003)

In meeting its obligation to remove in a permanent manner threats to human health and in meeting its obligation to promote environmental justice, the EPA choose to leave toxic attic dust in place and only remediate after dust was found to be contaminating living areas.

Superfund was designed not only to deal with actual harms to human health and the environment but also with threatened harms and potential threats. CERCLA specifically deals not only with release of hazardous substances but also with the "threat of" release "into the environment of a hazardous substance or pollutant or contaminant. CERCLA defines each of these terms quite broadly." (*Environmental Law Handbook*, p. 76.) Also, Superfund places an emphasis on treatment rather than containment for hazardous waste. [EPA, "Rules of Thumb for Superfund Remedy Selection," 40 CFR 300.430 (a)(1)(iii)(A)] Yet, in the Record of Decision for the BPSOU, the EPA determined that a one time evaluation of the living spaces of homes in order to determine whether or not toxic attic dust was present was sufficient to meet it burden of protecting human health and promoting environmental justice. It is hard to fathom how EPA could argue that a one-time evaluation of homes was sufficient in order to achieve this purpose.

Based on what we know regarding toxic attic dust within the BPSOU and what we know concerning housing within the BPSOU, the following conclusions are warranted regarding evaluation of homes in the BPSOU for toxic attic dust exposure:

1. Toxic attic dust poses a threat to the health of residents of BPSOU.
2. Given the deteriorated and substandard condition of most of the housing units within the BPSOU and given the ease of creating new and/or expanded pathways of contamination, eventually, contaminated attic dust will seep into living areas and expose residents to toxic contamination.

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3. This toxic burden falls disproportionately on the poor living with the BPSOU area and is not only a human health issue but also an environmental justice issue.
4. Given the deteriorated housing stock in the BPSOU, the EPA needs to be much more aggressive in attacking the problem of contaminated attic dust both in terms of more frequent inspections and evaluations of property (one-time inspections are clearly not enough) and more rigorous measures to prevent pathways of exposure to contaminated attic dust from opening up.
5. It is contrary to the EPA environmental justice mandate to place the burden on the poor to monitor and report possible contamination exposure. The poor may well lack: knowledge of the contamination's presence, the dangers such contamination poses and how to report possible exposure and whom to report it to. Low-income citizens may be fearful of reporting potential exposure to a government entity, may be fearful of incurring personal liability by reporting or getting into trouble by reporting, if renters, residents may be fearful of getting "in trouble" with the owner, and residents may have a lack of knowledge of how the bureaucratic Superfund process works (after all, it is pretty Byzantine).
6. The EPA has the regulatory authority to modify institutional controls within the BPSOU in order to more fully assure that attic dust contamination is not entering into living areas within the homes of BPSOU.

It is problematic as to whether the Remedy as currently being implemented will reach populations of concern, particularly low-income citizens.

The citizen education/community involvement approach articulated in the Remedy is inadequate. Yet, this educational/community involvement component is critical for the success of the Abatement Plan. The Plan's approach places the burden of avoiding exposure to toxic wastes on the residents of Butte Priority Soils. Effective resolution of liability obligations is shifted from the PRPs to the non-liable citizens. This is a total convolution of the Superfund process that calls for cleaning up an area in order to protect human health and the environment. Superfund is not an education program but a cleanup program. Superfund places the liability for cleanup on those legally responsible for the pollution, not the victims of pollution.

The EPA mandate for meaningful public participation is particularly pronounced when it comes to providing opportunities for meaningful participation by low-income citizens. On August 9, 2001, EPA administrator Christine Todd Williams issued a memorandum entitled "EPA's Commitment to Environmental Justice" which in part stated: "The agency defines environmental justice to mean the fair treatment of people of all races, cultures, and incomes with respect to the development, implementation, and enforcement of environmental laws and policies, and their meaningful involvement in the decision making processes of the government." She goes on to state that environmental justice means that everyone has "equal access to the decision-making process to have a healthy environment in which to live, learn, and work." The *Region 8 Action Plan* for environmental justice issued in April 2003 mandates a pro-active approach to include, among others, low-income citizens.

Although the institutionalized mechanisms and forums of participation have been provided with regard to Butte Priority Soils, contrary to EPA policy, there have been no pro-active attempts to specifically include or encourage low-income citizens to participate in the decision-making process. On August 21, 2001, the EPA stated that: "Fair treatment means that no group of people, including a racial, ethnic, or social economic group should bear a disproportionate share of the negative environmental consequences resulting from. . .the execution of federal, state, local and tribal programs and policies." Meaningful participation as defined by EPA is that "the decision

makers seek out and facilitate involvement of those potentially affected." In April 1995 the EPA issued "The Environmental Protection Agency's Environmental Justice Strategy" which mandates that the EPA needs to reach out to, among others, low-income residents and needs to afford them particular consideration in the development and execution of EPA policies, rules, regulations and guidelines. Sylvia F. Liu, Attorney, Environment and Natural Resources Division of the U.S. Department of Justice, in an article entitled: "Environmental Justice: An Overview of Legal Issues," states that agencies should: "Consider conducting outreach to the affected communities to promote participation in agency decision-making process concerning remedies." (February 2000) So far, no specific outreach has been directed to the low-income citizens within Butte Priority Soils. So far, the EPA has not reached out specifically to the low-income citizens who live within the Priority Soils area.

There have been developed no outreach programs that specifically target low-income residents of Butte. There has been extended no particular consideration of the effects of a waste-in-place solution on the low-income residents of Butte. The above lack of special attention to the low-income residents of Butte is at variance with the principles of environmental justice mandated under EPA rules, regulations, and policies. The proposed education program makes no special accommodation for reaching low-income citizens.

Public/stakeholder input is supposed to impact and shape EPA decisions. Public/stakeholder input is supposed to inform and be taken into consideration as EPA formulates a remedy. It is hard to see how low-income citizens can impact EPA decisions regarding Priority Soils if they are not specifically represented in the decision making process.

Summary--Public Participation and Environmental Justice:
It is a basic tenet of democratic decision making that: "on all matters where social action is substituted for individual action, liberty exists only through participation either in decision making or in control of leaders who make the decisions." (Emmette Redford-*Democracy in the Administrative State*.) It is not just the ethics of democracy that mandates citizen participation, but the quality of public decisions is enhanced by public participation. The more people who are substantively involved in making a decision, the more information and the more perspectives that are brought to that decision. Public participation means that more alternative solutions are considered and the resulting decision will have greater credibility and legitimacy. Meaningful public participation promotes public civic education and increases trust in government institutions. Efficiency is also enhanced by public participation in that public acceptance of an agency decision decreases the likelihood of prolonged challenges to that decision. The law also mandates that most public agencies take into account public comments in rendering their decisions. EPA policies, procedures, rules, and guidance documents certainly mandate significant and consequential public involvement.

Agency personnel should not view the provision for meaningful public involvement as simply a procedural hurdle that need only be formally addressed. There are valuable contributions that the public can make to the Superfund decision-making process.

1. Citizens know best how a decision will affect their interests.
2. Citizens know the local area.
3. Because it is concerned with the making and enforcing of government policy decisions, Superfund decision-making is as much, if not more, a political process than it is a scientific process. Cleanup decisions cannot be determined with the certitude of a mathematic or scientific theorem. Although there are those who would seek to avoid conflict by an appeal to the certainty of science (after all you can't argue with science),

an appeal to "good science" cannot eliminate conflict. Correct environmental decisions lie in the realm of the probable and contingent not the certain and absolute. As an inherently political process, the public must not only be involved but also allowed to be effective in their participation by decision makers. For example, consider Superfund's nine criteria for remedial alternatives evaluation. These criteria do not have scientific or technological certainty or precision. How they apply to perspective decisions, what they mandate and what they do not mandate, how they relate to each other, what they mean, and their significance are the result of political processes, bargaining and decision making. If one takes cost, for instance, how do you determine with scientific and technical certainty whether or not an alternative costs too much? The very standards such as contaminant action levels and the risk assessment process are infused with politics. Often action levels are the result of political bargaining and represent the lowest common denominator of what is acceptable to the various groups fighting about where the levels should be placed. The notion of value neutral decisions in Superfund is unobtainable.

4. Even decisions that are based in science and technology **have to be open to public scrutiny and comment.** The expert must offer his or her expert opinion to the public in the public realm. The expert's opinion must be tested, analyzed and evaluated in the public realm. We do not, even in environmental decision-making, have a government of experts. To this end, it is important to remember that not all expertise resides in government or the PRPs. Members of the general public often have extensive knowledge, experience, and expertise in the areas under consideration in Superfund. The wanton corporate hubris displayed at a recent meeting on Priority Soils where public input was characterized as the articulation of "feelings" is a disservice and mischaracterization of the value of the public participation process. Unfortunately, some Montana EPA officials buy into this characterization of the nature and value of public input.

For reasons already articulated, the public has a right to participate in Superfund decision-making. The low-income citizens living in the Butte Priority Soils area have a special right to participating in decision-making regarding the site. For reasons already articulated, EPA rules, policies, procedures, and guidance documents mandate efficacious and meaningful public involvement, particularly on the part of environmentally disadvantaged groups such as low-income citizens. For reasons already articulated, public participation produces sound environmental decisions. The specifics of my complaint address the issue of whether or not the Montana EPA really values public input into the decision making process regarding Butte Priority Soils. Does the Montana EPA allow public input to really impact a decision? Does the Montana EPA see public involvement, particularly involvement by low-income citizens as meaningful and efficacious? Does the Montana EPA afford meaningful opportunities, not just formal venues, for participation by low-income citizens? Given recent comments by Montana EPA decision makers, unfortunately, in terms of deeds, the answer is no. While the forms of public participation are present, the substance of efficacious public participation is missing. It will be the low-income citizens of the Butte Priority Soils area who will continue to bear a disparate toxics burden as a result of the failure to provide for meaningful public participation in the decision making process surrounding Priority Soils.

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To me this is a significant test case regarding the efficacy of public involvement in Superfund decision-making. Does the Montana EPA really assign any weight to public involvement? Are we just going through the motions? If issues are effectively off the table of efficacious public discussion, if the primary elements of a remedy have already been determined regarding the "soils" element of Priority Soils while we are still in the RI/FS process, if the purview and purpose of citizen input can be limited to what the agency would like, if major emergency actions already taken are beyond public scrutiny and if significant elements of the remedy can be instituted by a PRP prior to the completion of the RI/FS and public comment, public participation in the Priority Soils decision has no substance. Some of the venues of public participation are there but the reality is absent, particularly for low-income citizens. What we have is "environmental theatre" where the script is already written, the outcome is already determined and the actors are simply playing pre-assigned parts and reading predetermined dialogue. Public participation in Superfund decision-making should be considered by the Montana EPA to be more than histrionics.

It is clear EPA policy that special effort needs to be made to ensure the maximum level of participation by low-income citizens. So far no special efforts have been made to ensure meaningful participation on the part of low-income citizens who live within the Priority Soils area.

Caps are not Permanently Protective of Human Health and the Environment.

Yet, the BPSOU Remedy as currently being implemented makes extensive use of capping toxic waste left in place.

Problems with caps:

14. Metals can be remobilized through bio-irrigation. (Dueri, Sibylle, et. al., University of Laval, Quebec, "Modeling the Transport of Heavy Metals through a Capping-Layer: The case Study of the Flood Sediments Deposited in the Saguenay Fjord, Quebec.")
15. The long term efficacy of caps can be compromised by advection "related to consolidation, diffusion, chemical reactions, and the effect of . . . burrowing activity." (*Ibid.*)
16. Desiccation can cause cracking of the cap cover. (David Daniel, Professor of Civil Engineering, University of Texas, *Geotechnical Practice for Waste Disposal*)
17. The freeze-thaw cycle can produce changes in the structure and fabric of the cover and a way that increases hydraulic conductivity. (*Ibid.*)
18. Caps are difficult to construct correctly. (*Ibid.*)
19. Caps are difficult to maintain and repair. (*Ibid.*)
20. Erosion is a serious problem. (Jack Caldwell, U.S. Department of Energy, *Principles and Practice of Waste Encapsulation.*)
21. Biointrusion can compromise the effectiveness of the cap. (*Ibid.*)
22. Differential settlement of the cap can cause cracking. (Oweis and Khera, New Jersey Institute of Technology, *Geotechnology of Waste Management.)*
23. Caps require regular and often expensive repair. (*Ibid.*)
24. Stabilization of the cap is a problem. (*Ibid.*)
25. Caps present long-term subsidence and settlement issues. (*Ibid.*)
26. Because of their susceptibility to "weathering, cracking and subsidence" caps have limited long term utility. "Wind, rain, and generalized erosion over time can severely damage even a well-designed . . . cover." (U.S. Department of Energy, Office of

Environmental Management, "Remediation Technology Descriptions: Containment.") See also: Merritt, Frederick (ed.) *Standard Handbook for Civil Engineers*, McGraw-Hill, New York.

The extensive use of caps as a cleanup method for Butte Priority Soils would do nothing to reduce the toxicity and volume and mobility of contaminants. Caps do nothing to clean up a site. The extensive use of caps as a cleanup method for Butte Priority Soils would not provide a permanent remedy. The extensive use of caps as a cleanup method for BPSOU would violate the Superfund mandate for treatment over containment. In short, the extensive use of caps for the BPSOU would not be protective of human health and the environment.

Institutional Controls—The Public should be concerned about too great a Reliance on Institutional Controls for the Remedy as currently being implemented.

Institutional controls per se do nothing to reduce the mobility, toxicity, or volume of contaminants. Institutional controls do nothing to clean up a site. The institutional controls being considered in the EPA's RI/FS for Priority Soils would seriously limit productive land uses and greatly compromise the property rights of owners to use their land as they determine. The extensive reliance on institutional controls is also contrary to the Superfund mandate of preference for treatment over restricted land use. Institutional controls do nothing to treat a site. The EPA's own document "Rules of Thumb for Superfund Remedy Selection" states that the law mandates a clear preference for treatment over all other approaches. "EPA expects to use treatment to address the principal threats posed by a site. . . ." [40 CFR 300.430(a)(1)(iii)(A)]. The above document also notes: "Institutional controls. . .generally shall not substitute for more active measures. . . ." (pp. 12-13)

The EPA itself has found significant problems with institutional controls at its other sites. In an article entitled "EPA, Think Tank Studies Show Superfund Land-use Controls Flawed, December 10, 2001" which summarizes "Superfund Report via Inside EPA.com" by Resources for the Future, we find these conclusions, ***reached by the EPA itself***, which due to their significance, I will quote at length:

"EPA and environmental think tank studies have shown that the federal and state governments' land-use restrictions at Superfund sites, known as institutional controls (IC), are seriously flawed, with an agency study showing the controls are not reliably implemented and the think tank report finding the controls are dramatically under-funded."

"During a November 27 land use control summit, sponsored by the International City/County Management Association (ICMA), EPA officials and the Environmental Law Institute (ELI), outlined numerous shortcomings they have found with EPA's IC monitoring and enforcement efforts nationwide. While EPA released the results of a study showing EPA has failed to ensure Superfund ICs are reliably implemented, and ELI study indicates that EPA's ICs are dramatically under-funded."

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"Bruce Means, of EPA's Federal Facilities Restoration and Reuse Office, told attendees that preliminary studies show that half of the ICs implemented under Superfund records of decisions (ROD) were mischaracterized. During a study of RODs conducted during 1999 and 2000, the agency found that half of the ICs established under RODs were not implemented as the agency had planned."

"And Jay Pendergrass of ELI outlined the preliminary findings of ELI's study of state's IC programs, which showed that the programs are severely under-funded."
"In a draft version of the report, Pendergrass found that state environmental programs are underfunded and as a result the sites allocate very little time on IC implementation. The funding and staffing shortfall 'raises concerns about whether [ICs] are implemented as intended and [are] as protective as intended."

"An ICMA source agrees that EPA has serious problems with its IC program, saying that the agency has many RODs with vague or inconsistent references to such controls."
(pages 1-2)

The greater the cleanup of the Butte Priority Soils Operable Unit, the more the site can be used productively. The less cleanup of the BPSOU, the less the site can be used for residences and recreational uses. Given the EPA's admission that institutional controls have failed it in the past, it is amazing that the remedies listed in the RI/FS for Priority Soils call for such extensive use of institutional controls.

Other Problems with Institutional Controls:

n. There is a tendency not to implement institutional controls as time passes. Frequently institutional control mandates are not carried to completion.
o. The effectiveness of institutional controls usually depends upon the ability, personnel and resources of the local government to implement. Often local governments do not have the personnel or resources to devote to the implementation and monitoring of institutional controls. Given the national administration's proposed cutbacks in Superfund allocations, resources will be increasingly unavailable on the national level to monitor implementation and effectiveness of institutional controls. Certainly the financial capacity of Butte's local government to implement and monitor institutional controls is greatly limited. Nowhere does the EPA's comprehensively address the above issue.
p. "Institutional controls rely heavily on humans to implement, oversee, and administer them. It is human nature to ignore tasks that no one else seems to care about or where the purpose is not readily apparent. Residual hazardous substances are a classic example of a problem that is not readily apparent." ("Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge?" Environmental Law Institute, p. 2)
q. Although EPA must review the remedy every five years, the frequency of this review process may be insufficient to detect the failure of institutional controls.
r. The use of education as part of the institutional controls strategy is a substantial part of the EPA's approach to implementing institutional controls. Research of previous remedies under Superfund indicates that education programs fail to materialize.
s. "In addition to the direct costs of implementing institutional controls, their use can impose substantial indirect costs on communities, property owners, prospective

purchasers and developers by limiting the ways a site may be used. The burden of the restrictions on use of the site falls on the property owner and the community, with the owner reaping potentially lower profits from use of the property and the community receiving lower social benefits from the allowed uses than would have been possible if no restrictions existed." (ELI, *Ibid.)*

t. Because the sites where institutional controls will be implemented will not be cleaned up and will present a continuing potential threat to human health, these sites will be off limits to development in perpetuity. It is difficult to see how the use of institutional controls meshes with the goals of the EPA's Superfund Redevelopment Initiative.

u. It is impossible to determine future possible land uses for the site nor is it possible to predict unanticipated land uses. (See: "Linking Land Use and Superfund Cleanups: Uncharted Territory," by Probst, Hersh, Wernstedy and Mazurek, *Summary of Findings*, RFF, p. 1)

v. "Institutional controls have more problems than just risk miscalculation. Breeches in the site because of future construction, or even animals may cause the control to fail. The lack of a required contingency plan, would not account for new remedies, new information, or failed institutional controls negatively impacts the effectiveness of the treatment. Institutional memory loss was well is an important factor. This memory loss occurs when a party decides to breach the original institutional control without its own knowledge. In fact, in the ICMA (International City/County Management Association) study, the majority of respondents (63%) said that breaches in the institutional controls on a site were highly or somewhat likely. Following up on that question, 30% of the respondents reported that no formal inspection schedule was set up to evaluate the site as require by law." (Erwin Tam, Environmental Science and Economics, UC Berkeley, "Analysis of Institutional Controls at California Superfund Sites.")

w. "Concern has been expressed about the long-term viability of institutional controls as a remediation tool. For example, they may be forgotten; enforcement agencies may not effectively review properties or land users' actions; or land users simply may take their chances. Decision makers should weigh the full costs of such options, including capital costs, costs of long-term sampling and analysis, and costs of replacing equipment, as well as concerns about potential long-term risks associated with contaminants left in place, against the cost options that would remove the contaminants completely. Many local governments do not yet have the capacity and resources necessary to meet the challenges of long-term stewardship." ("Understanding the Role of Institutional Controls at Brownfields Sites: Major Concepts and Issues.")

x. Because institutional controls leave large amounts of contaminants in place, institutional controls will have to be perpetual. Who is to say what anticipated land uses come up for an institutionally controlled area? For example, fifty years after the record of decision for Butte Priority Soils is implemented, the contaminants will still be there threatening human health and the environment, but will the will be there to restrict land uses in order to prevent the release of contaminants. "Institutional controls 'work' only if they are complied with. And while this is true of any site remedy, institutional controls require monitoring and enforcement over long time periods." ("Linking Land Use and Superfund Cleanups: Unchartered Territory, Probst, et al., Resources for the Future Center for Risk Management.) Will the will to enforce institutional controls exist fifty to a hundred years in the future?

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y. Legal, social and political pressures limit the effectiveness of institutional controls. (*Ibid.*)
z. The long-term effectiveness of institutional controls is unknown. "There has, however, been little investigation of what happens at sites on the National Priorities List (NPL) when land use plays a prominent role in the remedy selection process. There also has been little analysis of what institutions are involved in making land use decisions and maintaining land use restrictions over time. It is unclear what legal mechanisms are most effective, what institutions will be responsible for enforcing institutional controls, and who's going to pay for these additional responsibilities. We need to be able to answer these questions if land use-based remedies are to be protective over the long term." (*Ibid.*)

"Planners of long-term disposal systems have long recognized the difficulty of maintaining institutional control over property. . . ." (Jack A. Caldwell and Charles C. Reith, *Principles and Practice of Waste Encapsulation*, 1993, p. 35)

More on the inadequacy of Institutional Controls

Superfund's goal is to clean up hazardous waste sites that pose a threat to human health and the environment. Superfund cleanups should provide a permanent remedy that, in part, reduces the toxicity, mobility, and volume of contaminants. Because Superfund has a strong preference for treatment, the use of institutional controls should normally not be a substitute for "more active measures (e.g. treatment and/or containment of source materials) as the sole remedy. . . ." (40 CFR 300.430(a)(1)(iii)(D). OSWER Directive 9355.0-69, EPA 540-R-97-013 makes essentially this same point that the use of institutional controls should be a remedy of last resort.

To the extent that contamination at a site is really cleaned up, the necessity for institutional controls is minimized. To the extent that institutional controls are used at a site to put waste off-limits, the extent of contamination cleanup is minimized. It is important to remember that the impetus for Superfund in the first place was a failure of institutional controls to prevent the contamination problems and resultant health effects at Love Canal where the institutional controls were not followed. Risk is a function of both toxicity of the materials on site and the degree of exposure to the hazardous waste. (*Effects of Future Land Use Assumptions on Environmental Restoration Decision Making*, DOE, Office of Environmental Policy and Assistance, RCRA/CERCLA Information Brief, DOE/EH-413/9810, July 1998, p.1) Institutional controls depend on limiting exposure to toxic materials and do nothing to lessen the toxicity of these materials. After institutional controls are implemented, the toxic materials that originally triggered the Superfund cleanup are still on site to threaten human health and the environment.

Superfund should be concerned about treating hazardous wastes so that they are no longer toxic and, if treatment of the waste is technically impossible, removing the hazardous waste to a repository where the waste will no longer threaten human health and the environment. "Our obligation is to free subsequent generations of the responsibility for caretaking our hazardous residues, not to saddle them with housekeeping chores which, if neglected, will result in the re-pollution of the environment that we worked so hard to clean." (Jack A. Caldwell and Charles C. Reith, *Principles and Practice of Waste Encapsulation*. Boca Raton: Lewis Publishing Co.,

1993, p. 35.) Wastes that are institutionally controlled are still a permanent threat to human health and the environment.

The cleaner a site is after remediation, the greater the potential land uses for that site. The more contamination left after remediation, the less the potential land uses are for the site. "Citizens have pushed for the highest cleanup standards, arguing that an unrestricted use would allow a wider range of future development at the site." (Wernstedt, et. al., *Basing Superfund Cleanups on Future Land Uses: Promising Remedy or Dubious Nostrum?*, Resources for the Future, Discussion Paper 98-03, October 1997, p. 17) The institutional controls being considered in the EPA's RI/FS for Butte Priority Soils would seriously limit productive land uses and greatly compromise the property rights of owners. The extensive reliance on institutional controls is also contrary to the Superfund mandate of preference for treatment and cleanup over institutional controls that restrict land use in perpetuity. If the goal is to encourage productive land uses after Superfund cleanup, a clean site affords the most encouragement. If the goal is to protect human health and the environment, these toxic materials must be treated and/or removed.

The thesis of my comments is that the use of institutional controls for the Butte Priority Soils Operable Unit should be minimal. Instead of extensive use of institutional controls to deal with the BPSOU contaminants, the toxics in Butte Priority Soils should either be treated on site or, if that is not feasible, be removed to a safe repository and treated there using appropriate innovative technologies.

The reasons for this conclusion are:

1. Institutional controls do not meet the Superfund mandate of really cleaning up a site. To clean up means to make free of contamination.
2. Institutional controls are not permanent remedies. Rather, institutional controls permanently leave pollutants in place.
3. Institutional controls do nothing to reduce the toxicity of the hazardous materials. Lead, arsenic, mercury, and cadmium don't naturally attenuate over time, but keep their toxicity indefinitely.
4. Institutional controls are designed, implemented and monitored poorly.
5. Institutional controls have inherent enforcement problems.
6. Institutional controls have severe legal problems that work against effective reduction of the threats to human health and the environment posed by toxic materials.
7. Institutional controls are ineffective.
8. Institutional controls for a Superfund site are usually the result of a defective process that limits public participation and which leads to a haphazard development of institutional controls for a particular site.
9. Institutional controls are poorly understood and poorly defined.

Institutional Controls are not Effective

A. The EPA itself has found significant problems with the effectiveness of institutional controls. For example, in an article entitled "EPA, Think Tank Studies Show Superfund Land-use Controls Flawed, December 10, 2001" which summarizes "Superfund Report via Inside EPA.com" by Resources for the Future, we find the following conclusions:

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1. Institutional Controls are not reliably implemented. The EPA study found that over half of the institutional controls implemented under EPA issued records of decision are mischaracterized and that half of the institutional controls were not implemented according to EPA plans.
2. Institutional Controls are dramatically underfunded.
3. Monitoring of institutional controls is poor. Another study of California Superfund sites entitled: "Analysis of Institutional Controls at California Superfund Sites" by Erwin Tam of the University of California—Berkley found that 30% of the sites had no inspection schedule as required by law and in 63% of the cases it was felt that compromise of the institutionally controlled site was likely.
4. Enforcement of institutional controls is poor.
5. ROD's tend to have "vague or inconsistent references" to institutional controls.

In a study done by English, et. al. of the University of Tennessee entitled *Institutional Controls at Superfund Sites*, (July 1997. Hereinafter cited as *Institutional Controls at Superfund Sites.*), which was funded in part by EPA; the EPA's remedial project managers admit the above listed problems (1-5) with institutional controls. The report concludes: "Perhaps most importantly, the results of this study point to a fairly strong sense of unease on the part of some RPMs with the efficacy of institutional controls. This finding is consistent with discussions in the literature on the efficacy of institutional controls." (p.67) No wonder noted engineers Jack A Caldwell and Charles C. Reith stated in their book *Principles and Practice of Waste Encapsulation*, that "Planners of long-term disposal systems have long recognized the difficulty of maintaining institutional control over property. . . ." (p. 35)

B. "To the extent that responsibility for selecting and maintaining the long-term effectiveness of the remedy will become contingent on the intent and actions of a more diffuse set of institutions—local government, private property laws, current and future property owners, land recordation offices, the courts—the ultimate effectiveness of a remedy to protect human health and the environment will become increasingly difficult to assess." (Hersh, et. al., *Linking Land Use and Superfund Cleanups: Uncharted Territory*, Center for Risk Management, 1997, p.49. Hereinafter cited as: *Linking Land Use.*) If institutional controls become a prime remedy for the Butte Priority Soils Operable Unit, the community will have to live with these controls, effective or not, in perpetuity.

C. The success of institutional controls will depend on changing the way people behave which is very difficult.

> Managing human behavior is an extraordinarily difficult task. None of the institutional controls in use, or under consideration for future use, is foolproof. None can reduce to zero the risk of human or environmental exposure to hazardous substances left in place at a site. Nor is there a universal, all-purpose institutional control appropriate for all sites. (Environmental Law Institute, *Protecting Public Health at Superfund Sites: Can Institutional Controls Meet the Challenge*, 1999, p. 13. Hereinafter cited as *Protecting Public Health.*)

The risk of human exposure is considerably less if the toxics are treated to make them non-toxic or if they are removed to a repository where the public cannot come in contact with them.

D. The relationship between land use and toxic exposure is not well understood and can have a great deal of variation.

Institutional Controls have Inherent Limitations

A. Institutional controls do nothing to reduce the toxicity or volume of contaminants. Institutional controls, per se, are not that effective in reducing mobility of toxics off-site. To be protective of human health and the environment, institutional controls would have to last as long as the toxics last. "Substances such as lead, mercury, arsenic, and cadmium will not degrade at all and will remain potentially hazardous unless removed or treated. In order to effectively protect against exposure to such long-lived risks, institutional controls would need to last essentially for as long as humans are expected to live on the planet." (*Protecting Public Health*, p. 13.) No institutional control has this needed level of permanence. If institutional controls are used instead of removal and/or treatment, these controls will have to work in perpetuity. Remember, toxic heavy metals such as those found at the BPSOU do not lose their toxicity over time. Yet, institutional controls are predicated on the designated land use of a sight existing in perpetuity—a flawed assumption. Land use changes are the most frequent changes in a locality.

B. Institutional controls also increase the likelihood that people will unknowingly be exposed to hazardous materials. Leaving contamination on site will always pose a threat of exposure if the institutional control fails. Predicting the long-term efficacy of an institutional control system is very problematic.

C. As we saw with regard to lead exposure, very often, as time passes, it is determined that the contamination in place is more dangerous to human health and/or the environment than originally thought. In such a situation, the in-place institutional controls may not be sufficiently protective of human health and the environment. "Questions then arise about who should be responsible for additional controls or remediation, and about whether residual contaminants should be allowed only if their risks and methods of containment are well understood." (*Institutional Controls at Superfund Sites*, p. 36.) It is critical that we get the most protective remedy the first time around.

D. Since the implementation of institutional controls depends on people, human error or neglect is a constant problem. After a remedy is selected, the degree of interest in the implementation of the remedy does not match the degree of interest shown during the remedy selection process. "Residual hazardous substances are a classic example of a problem that is not readily apparent, and the tasks associated with implementing institutional controls are unlikely to be the focus of widespread public attention in many cases. Thus, decision makers should plan for a relatively high probability that the person charged with the responsibility to implement an institutional control will fail to do so because that task is not a high priority for that person or because it is a task without a specific deadline and can therefore be postponed indefinitely." (*Protecting Public Health*, p. 103) The efficacy of an institutional control depends on human judgment and "the judgment of any individual may be questionable in a specific situation and a poor judgment about implementing institutional controls could cause people to be exposed to hazardous substances." (*Protecting Public Health,* p. 105)

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The Meaning and Understanding of Institutional Controls is Problematic.

A. What are the institutions that will be charged with controlling the toxics? How will these institutions coordinate their activities? Who will devise these institutional controls? Who will have enforcement responsibility? How will these controls be enforced?
What is meant by controls? To what extent will the nature of these controls be the result of political processes rather then good protective environmental and scientific technology? Who will monitor the institutional controls? How often will the controls be monitored? How will they be monitored? All of these questions must be satisfactorily answered before the public can have any confidence in the protectiveness of the controls. Yet, in far too many cases where EPA has extensively utilized institutional controls, these questions have never been answered. Nor is there any consensus as to how they should be answered.

B. "When we admit societal values, power, political leverage, and notions of rights and duties into the picture, it becomes difficult to see 'controls' as anything but contested, and hence problematic. For institutional controls are not stagnant features of a remedy but are made and unmade in the course of experience by regulatory statutes, by the acuity of government oversight, by negotiations at planning board meetings, by the attitudes of bankers, developers, and others involved in real estate, by the limitations of scientific understanding of the health risks posed by toxic chemicals, by the vast and evolving corpus of real property law, by public trust in government or the lack thereof, and, in a broader sense by the constellation of rights and responsibilities that inform a societal ethic." (*Linking Land Use*, p. 52. See also: T. Beatley, *Ethical Land Use: Principles of Policy and Planning* (Baltimore, MD: Johns Hopkins Press, 1994 and R. Platt, *Land Use and Society: Geography, Law and Public Policy* (Washington, D.C.: Island Press, 1996)
Even if there were some agreement on the nature and role of institutional controls, that agreement would be fleeting.

The Effectiveness of Institutional Controls is Compromised by a Dependency on Local Government.

A. It is impossible for local government to predict future land uses. Most land use planning is done in a very piecemeal, incremental fashion. One of the great faults of incremental decision-making is its inability to predict accurately or to plan for possible future events that differ from the present.

B. Often the development of institutional controls occurs after the record of decision has been determined. This later development limits public participation and limits local government input into the design and implementation of institutional controls. If institutional controls are imposed on local government after secret consent decree negotiations, local governments may well see no compelling reason to be pro-active in enforcing or monitoring these controls.

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C. Often the development of specific institutional controls is more of a political process rather than a technical or scientific process. The essence of the political process is compromise which compromises may not be protective of human health and the environment. "When institutional controls are used to assure protection of human health and the environment, the technical adequacy of the remedy becomes dependent on a number of non-technical factors over which EPA has little influence. These include: the efficacy of local government administration; the consistent application of zoning ordinances; the ability of private property restrictions (such as easements and restrictive covenants) to bind both current and successive users of the sites; and prompt enforcement." (*Linking Land Use*, p. 7.) Land use planning on the local level is often not systematic but results from the compromises that are endemic to the political process. Often land use planning decisions represent the interests of developers, bankers, real estate agents, and etc. rather than the interests of the general public.

D. The lack of consistency in developing and applying land use controls on the local level means that institutional controls are not very dependable or reliable. "In no area of American law are there such frequent requests for amendments to the law (rezoning requests) or minor revisions to the law under the guise of an administrative actions (variance, special exemptions, and so forth." (*Linking Land Use,* p. 61) In fact changing zoning is the most common form of land use action which local government takes. (*Ibid*., p. 62) E.D. Kelly in "Zoning" states this process is inherently "unpredictable and unfair." (Found in *The Practice of Local Government Planning*, 2nd ed., ed. F.S. So and J. Getzels (Washington, D.C.: ICMA Training Institute, 1988) Variances are also frequently given. B. Collingsworth in *The Political Culture of Planning* notes: "Various studies have convincingly shown that boards of adjustment (or appeal) commonly operate according to their own sense of what is right, with little regard to the law, or even their local planning department." (New York: Routledge, 1993, p. 7) English, *et. al.* conclude in *Institutional Controls at Superfund Sites* that: "local governments can repeal or modify any ordinance that they create. In no other area of American law are there such frequent requests for amendments to the law, and decisions about land use have been among the most controversial and contested issues in many communities. Furthermore, some zoning ordinances place few locational constraints on residential construction, and, especially if a local government does not agree with the proposed Superfund remedy, it may be unwilling to cooperate by amending its zoning ordinance." (Energy, Environment, and Resources Center, University of Tennessee, July 1997. Hereinafter cited as: *Institutional Controls at Superfund Sites*.) For example, most restraints on local governments ability to change zoning regulations are procedural not substantive.

E. Local governments also face serious problems regarding the long term, permanent application of institutional controls. Enforcement of institutional controls by local government has been called "the weakest link of the chain." (Claudia Kerbawy, telephone interview with Robert Hersh, November 1995. Kerbawy is Chief of 307, Environmental Response Division, Michigan Department of Environmental Quality, Lansing, Michigan quoted in *Linking Land Use*, p. 65.) E.D. Kelly in *Enforcing Land Use Controls* calls local enforcement and monitoring of institutional controls "a planner's paradise but an enforcement nightmare." (Planning Advisory Service, Report Number 409 [Chicago: American Planning Association, 1988], p. 4)

F. The effective use of institutional controls demands coordination between and among several levels of government—a difficult, if not impossible, task. Several government agencies may be

charged with selecting and implementing the institutional controls. The lack of coordination and cooperation between these agencies can doom institutional controls to failure. So often in the past, institutional controls have been selected on the federal level and the local government has been charged with implementation. Yet, often the local government does not have the authority, funding, interest in or commitment to the institutional controls imposed on it. Coordination and commitment problems can mean that the institutional controls will not be implemented as planned and will not be effective. "The entities responsible for implementation and operation of institutional controls must support the controls selected and have the authority, resources and commitment to enforce them. Because institutional controls may be essentially an unfunded mandate and can conflict with other interests of a locality or state, such as economic development, local acceptance is particularly important." (*Protecting Public Health*, p. 98)

G. The often-poor record keeping of the land use conditions that have been imposed on a Superfund site also compromise enforcement. Even conscientious developers may not be able to ascertain what restrictions have been placed on a piece of property they wish to develop.

H. Problems with local funding also limit the enforcement of institutional controls.

> "The long term efficacy of institutional controls must be based on regular monitoring, PRP or site owner compliance, and prompt enforcement; yet funding for environmental monitoring and enforcement at the local level has been reduced, and noncompliance with property-based restrictions can be difficult to detect. With deep funding cuts for environment enforcement activities at both the federal and state levels, there is a strong possibility that noncompliance with institutional controls will go unnoticed. Institutional controls work only if they are complied with. While this is true of any site remedy, institutional controls require monitoring and enforcement over long time periods and are thus more problematic. If we define a right to exist only when there is a system to protect the holder of the right from action or claims of another, to what extent should we see the increased use of institutional controls as a process that reduces the rights of nearby residents or workers on remediated sites while privileging those of past polluters? " (*Linking Land Use*, p. 68)

I. Local and state governments experience great turnover of staff. Institutional knowledge about the institutional controls is lost when there is a constant turnover of knowledgeable personnel.

Legal Issues Limit the Effectiveness of Institutional Controls

A. Another problem complicating the use of institutional controls are the courts. The courts can potentially play a significant role on land use decisions and land use decisions can be very litigious.

> "Although the courts try not to make substantive zoning decisions, judicial attacks on local land use regulations are well documented in case law and in the planning literature and constitute yet another source of uncertainty to the effective working of institutional controls at Superfund sites. In view of the wide variation in the decisions of state and appellate courts concerning the limits of police power to regulate land use and the need for

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> Constitutional protection for the individual, it is easy to envisage the possibility that an owner of a site that is encumbered with a use restriction may challenge and successfully invalidate an institutional control, such as a zoning restriction, on the grounds that the restriction will cause a severe burden and, as such, constitutes a taking of private property by the government." (*Linking Land Use*, p. 64)

B. The NCP does not clearly specify the legal authority for institutional controls. Because there are no detailed statutory specifications of institutional controls, institutional controls are often left to the end of the remedy selection process where public input is minimal. Leaving them to the end is problematic in that: "If you leave institutional controls to the last and you can't get them implemented, then you're stuck. You're at a dead end rather than the destination of the record of decision (ROD)." (Claudia Kerbawy, *op.cit.*, p. 53)

C. On a practical level, it is unclear who should monitor and enforce the institutional controls. RODs usually have little specificity regarding the implementation and monitoring of institutional controls. Often the specification of the nature and types of institutional controls is very general. Questions abound regarding what kind of monitoring will be performed, who will perform the monitoring, how and what type of enforcement will occur, what will be the frequency of the monitoring, and who is responsible for maintaining the protectiveness of the institutional control arrangements. The technical remedy is determined first and then institutional controls are developed to protect the remedy. Yet, it is often difficult to get acceptance by property owners or PRPs after the ROD is issued

D. Given that issues related to institutional land use/property control are not based in federal law but are based in state property laws or the local police power, federal control of institutional controls on the local level is very limited. CERCLA provides EPA with oversight authority over institutional controls that are part of the ROD remedy but CERCLA provides no mechanisms to enforce that control. Every five years, EPA can amend a remedy when contaminants are left in place, but during that five-year period the supervision of institutional controls is with the local government. Much to compromise a remedy can happen in five years. Moreover, there are serious proposals in Congress to remove the five-year review process. Hence, federal supervision of institutional controls is very problematic and could disappear altogether.

E. It is very problematic whether an institutional control on a current owner of a particular property would bind subsequent owners of that property. "Can third parties (for example, community groups or the local government) enforce a restriction at a site if the property owner fails to comply with the control and the holder of the easement, for example, (EPA, a PRP, the state government, or a local government if signatory to the agreement) fails to act properly? (*Linking Land Use*, p. 57) In *Environmental Regulation of Real Property*, N. Robinson comments that institutional control covenants are very complicated and that "they often defeat the attempts of parties to write covenants which will be enforceable against successors." (pp. 6-16) For example, the form of future property ownership must be similar to the existing type of property ownership for an institutional control restriction to continue in force. Once a property is sold to a new owner, monitoring of what the new owner does on the property is diffuse if it exists at all.

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What happens in a commercial venture if the purchaser of the property goes bankrupt? Who is responsible for the institutional control restrictions on the property? Who will enforce these restrictions? State laws regulating the use property are Byzantine.

> "The common law tradition of different types of ownership could limit long-term effectiveness of (institutional controls') reliability if they fail to bind third parties to the agreements worked out in the consent decree, and the question of authority—who holds an easement and on what legal basis can the government or some other entity challenge noncompliance with the easement or deed restriction—is, again, open to interpretation. These issues suggest that proprietary controls, negotiated between PRP/site owners and government (federal, state, local) may be insufficient by themselves to effectively ensure the long-term safety of the public from residual contamination. Their reliability hinges on how carefully they are devised, the authority and willingness of the party holding the rights to use them, and the willingness of a property owner to comply." (*Linking Land Use*, p. 58)

F. Multiple owners or multiple use of a site also compromise the ability of government to police institutional controls.

G. The "touch and concern" doctrine can limit the efficacy of real covenants in the institutional control process. "Equitable servitudes" also are limited in their effectiveness by the "touch and concern" requirement.

H. Liability under institutional controls is problematic.

> "When institutional controls are created, it is important to determine who will be liable in the event they fail. Even if the EPA has entered into a consent decree at the time of the initial site remediation releasing PRPs from liability for residual contamination, questions remain about liability if the institutional controls are violated. For example: If the current property owners allow development that violates use restrictions, are they liable, are the original PRPs liable, or both? If people are harmed by such a violation, would they be able to sue the current property owners, the original PRPs or both?" (*Institutional Controls at Superfund Sites*, p. 34)

I. Another difficulty is that land use controls are "vulnerable to changing legal interpretations about the nature of property rights." (Wernstedt, et. al., *Basing Superfund Cleanups on Future Land Uses: Promising Remedy of Dubious Nostrum?,* Resources for the Future, Discussion Paper 98-03, October 1997, p. 16) For example, if the courts expand the scope of takings decisions to increase the extent to which government regulations are viewed as a "taking" then the efficacy of institutional controls will be diminished.

Summary

Based on the above one can, in summary fashion, conclude:
1. Because the data upon which the remedy was based is incomplete, inadequate or insufficient, additional investigation is mandated.
2. Because the assumptions upon which the remedy is based are unsupported, additional investigation is mandated.
3. Because toxics of concern were not recognized and evaluated in the original remedy selection process, new investigations should be conducted and, if needed, the remedy should be modified to remediate these new toxics of concern.
4. Because there are workability/implementation problems, the remedy must be changed.
5. Because the Community Involvement Program is inadequate, particularly in terms of environmental justice issues, the Community Involvement Program must be modified.
6. Because of inherent problems with Institutional Controls and the degree to which the Priority Soils Remedy's effectiveness depends on Institutional Controls, the implementation of Institutional Controls at the Priority Soils site warrants strict scrutiny.
7. Because of inherent problems associated with caps, the difficulties inherent in the use of capping hazardous waste must be addressed.
8. Because of new data, the Priority Soils Record of Decision must be significantly modified.

The BPSOU Remedy as currently being implemented must be modified in order to:

1. Remediate all attics containing toxic attic dust, both within the BPSOU and in areas adjacent to the BPSOU, regardless of whether or not a so call "pathway of exposure" to the toxic dust exists. If toxic attic dust in present, it should be remediated. The "pathways of exposure" approach to remediating attic dust will assure that the BPSOU remedy as currently being implemented will never be protective of human health and the environment.

2. Comprehensively examine/assess/remediate all toxics/metals/elements of risk to human health and the environment found within and adjacent to the BPSOU.

3. Correct the health risk assessment omissions and remediation inadequacies listed earlier in this paper.

4. Officially stipulate that the arsenic contamination found in attics within and adjacent to the BPSOU is smelter dust and thus within the remediation purview of the Superfund program.

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5. Develop, as part of the Remedy implementation, a comprehensive/effective/innovative community involvement program for the BPSOU that targets, in particular, low-income citizens.

6. Address and resolve the environmental justice issues that are discussed in this paper.

7. Justify the argument that remediating three toxics—arsenic, lead and mercury—will lead, automatically, to the remediation of all toxics present within the BPSOU.

8. Place the burden of initiating remediation on the PRPs and not on citizens.

9. Be proactive in Remediation. The Remedy as currently being implemented places far too much emphasis on voluntary cleanup initiation and compliance by property owners, or renters or occupants. (The primary burden should be on owners.) **Given the inadequate community outreach program articulated in the Plan, this is particularly problematic. While the PRPS for BPSOU need to be primarily responsible for implementing the cleanup of attics, however, the EPA needs to be pro-active also**. For example, private property controls such as deed restrictions, restrictive covenants, or government controls such as notices and advisories of contamination existing on the property, permits and informational devices (for example, notices that would become part of property deeds) could be used. **The EPA has no lack of statutory authority to enforce its cleanup decisions under CERCLA**. In developing these controls, I would reference:

1. "Draft Guidance "Institutional Controls: A Guide to Implementing Monitoring and Enforcing Institutional Controls at Superfund, Brownfields, Federal Facility, UST and RCRA Corrective Action Cleanups" February 19, 2003

2. The Uniform Environmental Covenants Act

3. All of the enforcement tools available to EPA under the general heading of Superfund (CERCLA) law, policies and regulations. EPA has broad authority to regulate private actions in order to protect the public's right to a clean and healthy natural environment. The contaminants found on private property within the BPSOU constitute a threat to the public health and welfare.

Certainly, EPA has the legal right to enter into such environmental covenants, controls and enforcement actions in order to protect human health and the environment from contamination now and in the future. If voluntary compliance fails, these, and similar, controls and enforcement actions can and should be used to gain access to contaminated properties in order to remediate them. (Perhaps, what could be done is to have some property owner/resident response level participation target or benchmark level and if that target or benchmark level is not met, mandatory compliance actions will be forthcoming. If participation levels are below benchmark targets, the EPA could use more aggressive measures. I am all for voluntary compliance as a first start but, if voluntary compliance does not work, more directive measures and procedures are needed. Hopefully, if coupled with a vigorous public outreach campaign, voluntary compliance will be successful.) In any event, the EPA needs to be more aggressive at identifying and remediating homes with attic dust contamination problems. Leaving attic dust in place is leaving

a threat to human health in place, contrary to Superfund law. Not only is this contaminated attic dust a direct threat to human health, it also is a threat to the whole BPSOU remedy in that it leaves in place a potential source of recontamination of the BPSOU. In order to ensure a permanently protective remedy, it would seem that preventing attic dust contamination from migrating to other parts of the BPSOU would be required. This can only be done, with any level of assurance, if existing attic contamination is expeditiously remediated regardless of whether or not some "visible" pathway of contamination is observed. EPA must approach this remediation proactively, using the extensive legal rights it possess to compel, if voluntary measures fail, remediation under Superfund. Over reliance on voluntary measures does not guarantee that the threats posed by attic dust contamination will be successfully remediated. Voluntary compliance may be the place to start, but if voluntary compliance is ineffective, more aggressive measures are necessary.

10. **Provide assurances that adequate monies will be available to implement the program.**

More on the Parrott Tailings

Precautionary Principle, Pollution Prevention and the Parrott Tailings

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CERCLA's purpose is to ameliorate or prevent actual or potential threats to human health and the environment emanating from toxic material or hazardous materials. Article II, section 3 of the *Montana Constitution* provides that "All persons are born free and have certain inalienable rights. They include the right to a clean and healthful environment…" and Article IX of the Montana State Constitution holds: "The State and each person shall maintain and improve a clean and healthful environment in Montana for present and future generations." MDEQ's Mission is: "to protect, sustain, and improve a clean and healthful environment to benefit present and future generations."

In interpreting the meaning of Articles II and IX of the Montana Constitution, the Montana State Supreme Court in *Montana Environmental Information Center v. Department of Environmental Quality and Seven-Up Pete Joint Venture* (No. 97-455, 1999 MT 248, 296 Mont. 207, 988 P.2d 1236) found that **Pollution Prevention** and the **Precautionary Principle** were part of the Montana Constitution's guarantee to citizens of a clean and healthy natural environment, i.e. these principles are part of Montana law. The Court found that "the right to a clean and healthful environment is a fundamental right. . . ." In analyzing the discussion and debate at the 1972 Montana Constitutional Convention, the Court determined that it was the clear intent of the participants that the environmental rights guaranteed in Articles II and IX were interrelated and that these two Articles espoused the principles of pollution prevention and the precautionary principle. For example, the Court cites Delegate McNeil who said in discussing how Articles

IX's subsections (1) and (3) were related: "It goes further than that and directs the Legislature to provide remedies to prevent degradation. **This is anticipatory**." (*Emphasis supplied.*) It was also clear during the discussion and debate during the Montana Constitutional Convention that the delegates intended the environmental provisions of the Constitution to mandate an "improvement" of the natural environment. The Court stated: " In doing so, we conclude that the delegates' intention was to provide language and protections which are both anticipatory and preventative. The delegates did not intend to merely prohibit that degree of environmental degradation that can be conclusively linked to ill health or physical endangerment. Our constitution does not require that dead fish float on the surface of our state's rivers and steams before its farsighted environmental protections can be invoked…." The Montana Supreme Court's decision is an unambiguous and binding statement that the **Principles of Pollution Prevention and the Precautionary Principle/Rule** must direct the administration and implementation of **ALL** state laws, rules, and regulations. **These principles are state ARARS that must be applied to the issue of removing the Parrott Tailings.**

Black's Law Dictionary also provides guidance as to the meanings of the concepts articulated in the Montana Supreme Court case above quoted.
Black's defines **potential** as "Existing in possibility but not in act." **Threat** is defined as a "menace." **Imminent** is defined as: "Near at hand; mediate rather than immediate, close rather than touching, perilous." **Substantial** is defined as of "Importance." Certainly, toxics left in place at the Priority Soils site would present a potential threat and a substantial, imminent threat as defined in *Black's Law Dictionary*.

The Pollution Prevention Principle/Standard warrants total removal of the Parrott Tailings as part of the Priority Soils Remedy.

The goal of Montana's pollution prevention program is to "prevent pollution before it occurs. Pollution prevention is the highest step of the waste reduction hierarchy and occurs prior to the other steps of recycling, treatment, or disposal." (MDEQ, *What is Pollution Prevention*?) **See also**: *MCA 2003*, 75-10-601; 75-1-602, 8 (b) (iii) and 75-1-103 (1) and (2) (a)

The Federal Pollution Prevention Act of 1990 established as national policy the mandate that: "Pollution should be prevented or reduced at the source wherever feasible." According to the EPA, pollution prevention means "source reduction" which is defined in the Pollution Prevention Act as any type of action which: "reduces the amount of any hazardous substance, pollutant, or contaminant entering any waste stream or otherwise released into the environment (including fugitive emissions) prior to recycling, treatment or disposal" and "reduces the hazards to public health and the environment associated with the release of such substances, pollutants, or contaminants." Pollution Prevention and the Precautionary Principle are also a part of several other federal laws: CERCLA, Clean Water Act, Toxic Substances Control Act, NEPA, RCRA, EPCRA, and the Clean Air Act. For a more detailed discussion of the role of pollution prevention and the precautionary principle in federal environmental law see: *Advancing Environmental Justice through Pollution Prevention: A Report developed from the National Environmental Justice Advisory Council-A Federal Advisory Committee to the U.S. Environmental Protection Agency*, June 2003. As this report makes clear, there is an intimate

relationship between environmental justice, pollution prevention, and the use of the precautionary principle, all of which are EPA policy mandates.

The point of Montana law and federal law is that it is better to prevent pollution before it harms public health and the environment rather than treat or mitigate the effect of pollutants after they are released. The medical motto: *Primum non nocere* (First, do no harm.) would apply to pollution prevention. Given the serious nature of the pollutants found at the Parrott Tailings site, the pollution prevention principle would warrant the total removal of the Parrott Tailings **now** rather than waiting for these contaminants to be released and then trying to treat them later. Given the serious nature of the pollutants found at the Parrott Tailings site, the pollution prevention principle would warrant removing as much of the contaminants as possible so as not to threaten future generations. Leaving the Parrott Tailings waste-in-place is a serious threat-in-place.

The Precautionary Principle/Standard warrants removing the Parrot Tailings now as part of the Priority Soils remedy.

The essence of the precautionary principle is that government should act before harm to human health and the environment occurs from the releases of toxic substances. The precautionary principle "dictates that indication of harm, rather than proof of harm, should be the trigger for action." (Sandra Steingraber, *Living Down Stream: An Ecologist Looks at Cancer and the Environment*, p. 270.) If there is a reasonable suspicion that harm to human health and the environment could occur from the release of a toxic substance, government should step in and fix the problem before its hurts people and the environment. The 1998 Wingspread Statement on the Precautionary Principle states: "When an activity raises threats of harm to human health or the environment, precautionary measures should be taken even if some cause and effect relationships are not fully established scientifically." Former EPA director Christine Todd Whitman stated: "policymakers need to take a precautionary approach to environmental protection. . .. We must acknowledge that uncertainty is inherent in managing natural resources, recognize it is usually easier to prevent environmental damage than to repair it later, and shift the burden of proof away from those advocating protection toward those proposing an action that may be harmful." If there is a strong suspicion that something bad is going to happen, government has an obligation to stop it prior to it's occurring. The precautionary principle is really grounded in old common sense sayings: "An once of prevention is worth a pound of cure." "Better safe than sorry." "A stitch in time saves nine." "Look before you leap."

The President's Council on Sustainable Development supports the precautionary principle. The Council declared: "Even in the face of scientific uncertainty, society should take reasonable actions to avert risks where the potential harm to human health or the environment is thought to be serious or irreparable." The American Public Health Association has passed a similar resolution concerning chemical exposure. (Resolution 9606)

The U.S. Court of Appeals for the District of Columbia Circuit upheld the EPA's use of the precautionary principle in *Ethyl Corp. v. U.S. Environmental Protection Agency* (541 F. 2d 1, 6 ELR 20267 (D.C. Cir.), cert denied, 426 U.S. 941 (1967) This was the case which supported the banning of leaded gasoline by the EPA. The banning of lead additives to gasoline was an

example of the precautionary principle in action. "The U. S. Court of Appeals for the D.C. Circuit upheld the U.S. Environmental Protection Agency's decision to take a precautionary approach and ban lead anyway, even in the absence of scientific evidence adequate to demonstrate exactly what the risks from the lead were or what the benefits of removing it would be. As it turned out, banning leaded gasoline was the single most important contributor to the virtual elimination of lead from air and from most children's blood." (Charnley and Elliott, *Risk Versus Precaution: Environmental Law and Public Health Protection*, Environmental Law Institute, March 2002)

There is ample support for the precautionary principle from international organizations and treaties, to many of which the United States is a signatory. For example, the Rio Declaration from the 1992 United Nations Conference on Environment and Development, also known as Agenda 21, stated: "In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation." The United States signed and ratified the Rio Declaration.
The precautionary principle is also part of the following: Ozone Layer Protocol, Second North Sea Declaration, United Nations Environment Programme, Nordic Council's Conference Declaration of October 18, 1989, PARCOM Recommendation 89/1, Third North Sea Conference, Bergen Declaration on Sustainable Development, Second World Climate Conference, Bamako Convention on Transboundary Hazardous Waste into Africa, OECD Council Recommendation of January 1991, Maastricht Treaty on the European Union, Climate Change Conference, UNCED Text on Ocean Protection, and the Energy Charter Treaty.

The Pollution Prevention Standard and the Precautionary Principle/Standard are ARARS for Parrott Tailings

In effect, the provisions of the Montana Supreme Court decision *Montana Environmental Information Center v. Department of Environmental Quality and Seven-Up Pete Joint Venture* (No. 97-455, 1999 MT 248, 296 Mont. 207, 988 P.2d 1236 as well as the other citations listed above become ARARs which must be met for the Priority Soils Operable Unit. This point is clearly articulated in: *United States v. Akzo Coating of America, Inc.* No. 88-CV-73784-DT (719 F. Supp. 571, 30 ERC 1361) (E.D. Mich. August 9, 1989) ARARs do not have to be numerical standards but can be found in the law of the state. The Akzo court found: "CERCLA envisions a substantial and meaningful role for the individual states in the development and selection of remedial actions to be taken within their jurisdictions. CERCLA also accommodates the environmental standards and requirements of the state in which a site is located." "Congress has not. . .displaced state regulation. . . ." "CERCLA does not expressly preempt sate law. . . ." With specific regard to numerical standards that court found: "Although the state law does not contain specific numerical standards, it is, as the State contends, legally enforceable and of general applicability. The EPA's own publication (EPA, *Superfund Program; Interim Guidance on Compliance with Applicable or Relevant and Appropriate Requirements; Notice of Guidance,* 52 Fed. Reg 32495, 32498 (Aug. 27, 1987) recognizes that general requirements having no specific numerical standards to be enforceable ARARs. General State goals that are duly promulgated

(such as a non-degradation law) have the same weight as explicit numerical standards. . . ." The Court cites numerous other cases to support it conclusion.

What are ARARS for Purposes of the Parrott Tailings?

According to the *CERCLA/Superfund Orientation Manual* (EPA/542/R-92/005, October 1992), ARARs are defined as "Any standard, requirement, criterion, or limitation under a State environmental or facility-siting law. . . ." Certainly, a decision of the Montana State Supreme Court, given the doctrine of judicial review, would qualify as a requirement, standard, criterion or limitation." This Montana Supreme Court decision is more stringent than any other federal court decision. So given that it is enforceable, has been promulgated and is more stringent than federal case law (See: CERCLA/Superfund Orientation Manual, p. XII-2 and XII-6), this decision is an **ARAR**. "CERCLA, Section 121(d)(2) requires compliance with applicable or relevant and appropriate state requirements when they are more stringent than federal rules and have been 'promulgated' at the state level. To be viewed as promulgated and serve as an ARAR at a Superfund site, a state requirement must be legally enforceable, based on specific enforcement provisions or the state's general legal authority, and must be generally applicable, meaning that it applies to a broader universe than Superfund site." (*RCRA, Superfund and EPCRA Hotline Training Module: Introduction to Applicable or Relevant and Appropriate Requirements*, (EPA540-R-020, OSWER9205.5-10A, June 1998, p. 19) Clearly the Precautionary Principal and the Principle of Pollution Prevention, as mandated by the Montana Supreme Court Decision *Montana Environmental Information Center v. Department of Environmental Quality and Seven-Up Pete Joint Venture* (No. 97-455, 1999 MT 248, 296 Mont. 207, 988 P.2d 1236), as well as Montana state environmental policy as articulated in the MCA, are clearly ARARs for the Priority Soils site which must be applied to the Parrott Tailings. As we know, CERCLA does not contain its own cleanup standards but relies heavily on state ARARs. "Regulation codified in the NCP govern the identification of ARARs and require compliance with ARARs throughout the Superfund response process, including. . .removal actions." (*RCRA, Superfund and EPCRA Hotline Training Module: Introduction to Applicable or Relevant and Appropriate Requirements*, (EPA540-R-020, OSWER9205.5-10A, June 1998, p. 1) Of course, as previously cited, ARARs do not have to be numerical or quantitative.

The point is that both Court precedents as well as EPA policy mandate the use of the precautionary principle as it applies to the Parrott Tailings. The Precautionary Principle/Standard and the Principle/Standard of Pollution Prevention, as mandated by the Montana Supreme Court decision *Montana Environmental Information Center v. Department of Environmental Quality and Seven-Up Pete Joint Venture* (No. 97-455, 1999 MT 248, 296 Mont. 207, 988 P.2d 1236) are in effect ARARS for the Parrott Tailings.

There is ample proof that the contaminants found at the Parrott Tailings area pose a threat to human health and the environment. The EPA argues that, as a result of their waste-in-place remedy, people will not be exposed to these toxic contaminants. Instead of removing the toxics from the people, EPA wants to remove the people from the toxics. (Given the vagaries of human behavior this approach is problematic at best.) All agree that if exposure to these toxic wastes was present, human health and the environment would be negatively affected. There is no guarantee that changing patterns of citizen behavior or inherent problems with caps and institutional controls will not in the future expose citizens to these wastes left in place.

The Precautionary Principal and the Principal of Pollution Prevention, which are both part of Montana law and federal law and which are, in effect, ARARs, demand that the waste-in-place remedy be rejected in favor of the maximum removal of contaminants at the Parrott Tailings. Leaving waste in place really is leaving an unacceptable and unwarranted threat in place.

The following comments were submitted via email by Resident #7 on May 19, 2015

Dear EPA,

Your mission is to protect human health and the environment. So why does it seem in Butte your mission is to do the bare minimum? Why aren't you insisting on cleaning up this mess to the highest possible standard? Why are financial considerations the bottom line of every decision here?

I understand you are in the midst of the 5 year review of the remedy, perhaps I can help you identify two of the many issues that should be looked at closely. Here is a quote from your guidance document on 5 year reviews: "In conducting your five-year review, you should evaluate the effects of significant changes in standards and assumptions that were used at the time of remedy selection."

One such change, that I feel is significant, is the CDC's change to its reference level for blood lead. In January 2012, a committee of experts recommended that the CDC change its blood lead level of concern. The recommendation was based on a growing number of scientific studies that show that even low blood lead levels can cause lifelong health effects. The CDC reduced its reference level from 10 micrograms per deciliter to 5. As you know, the model used to determine action levels for lead in soil uses this value as a basis. So why have you refused to re- examine the action levels? Our action level of 1200 ppm is the highest in the nation, from what I could find, and is significantly higher than the action level of our neighbors in Anaconda (400 ppm). I have written before with numerous reasons for re-examining the action levels, and if you need reminding I am happy to resend those as well. So I ask again, why aren't you insisting on the highest possible standard of cleanup?

Another recent significant change is in the assumptions surrounding the Parrot tailings. New data have come to light that seriously question the decision to leave this waste in place. Hydraulic conductivities were drastically underestimated during the time of remedy selection. How can treating this toxic plume forever be preferable to removing the tailings? Why aren't you insisting on the highest possible standard of cleanup?

These are just two examples I feel warrant attention in this 5 year review. I hope you will see fit to address them, and the others raised by this community, they deserve the highest possible standard of cleanup. Sincerely,

[Resident #7]
Butte Mt 59701

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CITIZENS TECHNICAL ENVIRONMENTAL COMMITTEE

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Commented [TS1]: Just received these comments – need to get formatting corrected. But we thought they were important for the CI discussion.

May 13, 2015

Nikia Greene and Kris Edwards
U.S. EPA Region 8 Montana Office
Federal Building
10 W. 15th St., Ste. 3200
Helena, MT 59626

RE: 2015 Five Year Review Comments

Dear Nikia and Kris,

CTEC recognizes that progress has been made in Silver Bow Creek/Butte Area National Priorities List (NPL) site remedy over the last decade. Many reclaimed and rebuilt areas are so well-established that local residents have forgotten the hills of bare mining wastes that existed here only a few years ago. Aquatic and terrestrial wildlife populations in and around Silver Bow Creek continue to increase, as does recreational use of restored reaches.

While strides have been made, the long-term success of the remedy depends on learning from past experience and addressing deficiencies in the remedy where they exist. This letter describes aspects of the remedy that remain a concern to CTEC members in the expectation that they will be addressed by the Five Year Review now underway.

We have detailed comments provided starting on page 3. A summary of these comments is as follows:

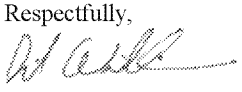
1. The Parrott Tailings and other buried MSD waste should be removed; recent studies substantiate this.
2. Storm runoff needs to meet water quality standards. Now is the time to evaluate what storm water BMPs and controls are effective and pursue installation of significant new storm water controls. CTEC believes that vigorous action on stormwater control is critical to continuing improvements in Silver Bow Creek. This could include the construction of additional retention ponds/basins which have proven to be both effective and sustainable, a continued comprehensive public education program and continued oversight and coordination on all aspects of institutional controls at BPSOU.
3. The downstream-first approach to remedy creates a risk of recontamination of restored areas. Upstream areas including the BPSOU must be remedied before recontamination can happen.
4. Remedial action levels/remedial goals need to be reviewed against current standards and science.

5. Environmental justice must be served to the Butte community. Health impacts must not be concentrated among any segment of our community.

6. Cap design should be improved where caps are compromised.
7. The community needs certainty that Berkeley Pit water treatment remedy is ready for use when the Pit reaches the critical water level in 2023.
8. Remedial investigation of the Westside Soils Operable Unit must begin.
9. Unilateral Administrative Order and Remedy Work Plan guided work through 2013. The community needs to know what authority is driving the current work.
10. The Five Year Review Protectiveness Statement needs transparency. The conclusions in the Five Year Review must be current and not based on the expectation that someday all remedial goals will be met.

We look forward to release of the current Five Year Review.

Respectfully,



David Williams
President
CTEC Board of Directors

cc:
Board of Directors CTEC (via Email)
Julie DalSoglio, EPA
Sara Sparks, EPA
Daryl Reed, DEQ
Joel Chavez, DEQ
Pat Cunneen, NRDP
Doug Martin, NRDP
Matt Vincent, BSB
Jon Sesso, BSB

Silver Bow Creek/Butte Area National Priorities List (NPL) Site-wide Comments

1. The Parrott Tailings and other buried MSD waste should be removed.
CTEC has contended since our March 14, 2005 Position Paper and comments on the BPSOU Proposed Plan that the MSD buried mining waste and tailings must be removed. Public sentiment and State of Montana official position echo this opinion. Data and new studies since the 2010 Five Year Review have further substantiated this opinion.

1. MBMG (2010b, 2012) studies showed the middle alluvial aquifer is confined from much of the MSD subdrain capture system.
2. MBMG (2012) identified metal loading to Blacktail Creek between Oregon Ave and George St.
3. Parrott tailings water quality monitoring suggest a worsening of water quality in the plume and that leaching is active (MBMG 2010a, 2012).

The ROD needs to be modified to require removal of buried waste at the Metro Storm Drain (MSD) as outlined in the Butte Area One Final Restoration Plan prepared by the Butte Natural Resource Damage Restoration Council (BNRC). The remediation should be paid for by the responsible parties and not with State of Montana NRDP restoration funds which are for restoration and replacement of injured natural resources.

2. Storm runoff needs to meet water quality standards.
The BPSOU ROD pp 12-42 indicates that storm water BMPs shall be given 15 years to achieve surface water standards. Given the 2006 date of issuance for the ROD, surface water standards must be met by 2021. After this, retention and lime treatment of storm runoff is required by the ROD. CTEC considers lime treatment a last resort, given the costs, need for perpetual treatment, and uncertainty of responsibility and funding for perpetual maintenance and operation. Greater efforts to control and treat storm water using BMPs or retention/detention basins is needed immediately.

The most recent data publically available, Atlantic Richfield 2013 Wet Weather Compliance Ratio Charts show that during wet weather, runoff total recoverable copper concentrations are always exceeding and commonly up to 40 times the standards. Given this it is imperative that full efforts and funds be put into implementing storm water controls during this BMP cycle. The following needs to be considered in this Five Year Review:

1. Are issues with caps or is the waste left in place preventing attainment of storm water goals?
2. Are soil water metal salts accumulating during the summer and being flushed by storm events?
3. Are retention basins significantly more effective than hydrodynamic devices (HDDs) at treating storm water? If so then now is the time to construct additional retention/detention basins to eliminate storm flow metal loading to Silver Bow Creek.

3. The downstream-first approach to remedy creates a risk of recontamination of restored areas.
While voluntary and interim actions including those required by the 2011 Unilateral Administrative Order (UAO) such as storm water controls, waste capping, and groundwater capture and treatment have improved protection of human health and the environment in Butte, metals can still migrate downstream and recontaminate remediated reaches of SBC. The Stream Side Tailings (SST) OU is being remediated ahead of Butte Priority Soils, and the Westside Soils OUs in the headwaters is at the beginning of Superfund assessment and actions. The 5-Year Review is an opportunity to evaluate how individual OUs are progressing and how well NPL remedy is progressing as a whole. It is a chance to make sense of the patchwork of interim actions by targeting final remedy for the entire NPL site, ensuring that OU cleanup is properly prioritized so as to not recontaminate downstream areas.

The Five Year Review needs to include a section describing how the remedy is progressing site-wide as a whole, what contingencies are considering:

1. the vastly different schedules for remedy completion,
2. effects that slower cleanup upstream has on achieving remedial goals downstream,
3. potential for recontamination of remediated areas downstream.
4. evaluate if source controls and caps in the BPSOU are sufficient to withstand a 100-year storm event.

This site-wide progress section should contain a list of issues from the individual OUs and evaluate how to prioritize follow-up actions based on the severity of risks to humans and the environment and the potential for issues from one OU to affect remedy success at another OU.

4. Remedial action levels/remedial goals need to be reviewed against current standards and science.
EPA indicated at the October 2014 CTEC public meeting that solid media action levels have been reviewed. The Five Year Review needs to describe how action levels have been reviewed.

In 2012, Centers for Disease Control and Prevention (CDC) defined a new reference blood lead level of 5 micrograms per deciliter (µg/dL) to identify children with elevated blood lead levels. Risk assessments for the site have based exposure scenarios on the former level of concern of 10 µg/dL of lead in blood. If solid media action levels will not be changed by this current information, the Five Year Review needs to clearly articulate why and how public health is protected.

Since the last Five Year Review EPA issued an Explanation of Significant Differences (ESD) outlining new sampling and cleanup standards for residences. The Five year Review should require that funds are available so that RMAP can resample and remediate residential lawns that were sampled under the old protocol when requested by the land owner.

5. Environmental Justice.
Low-income residents may bear a disproportionate impact of waste left in place and require specific targeting for voluntary residential abatement because low-income households are concentrated in the heavily contaminated portions of the BPSOU and because these households are more likely to be renters relying on property owners to initiate residential sampling and abatement. The Five Year Review should specifically examine:

1. What provisions have been made to specifically reach out to low-income residents, residents who are not well connected to mainstream communication media, and citizens who are new to the area.
2. The potential for exposure to contaminated indoor dust by residents is high if their homes have not been assessed for contaminants and contaminated indoor dust is not removed.
3. Disproportionate exposure to toxins by low income citizens living in uptown Butte.
4. The challenges that low income citizens face in minimizing exposure to toxins given limited financial resources, reliance on landlords to invoke abatement, and run-down structures being prone to leaking toxic dust into living areas.

6. Cap design should be improved where caps are compromised.
The integrity of caps on waste left in place in Butte are important because they will likely be there for hundreds of years where the land is eventually developed, and in perpetuity for undeveloped areas. The 2010 Five Year Review indicated widespread issues with cap integrity. The current review should update progress made in the last five years.

If cap integrity remains a problem then the review should identify cap design methods which provide better protection and evaluate which are best applicable to the BPSOU. The review also needs to evaluate whether cap failure presents an unacceptable risk to human health which should be dealt with immediately under ROD authority or time critical removal action. The review should evaluate if funding is inadequate for Butte-Silver Bow to perform needed cap O&M.

A butte resident explained at CTEC's public meeting that soil adjacent to the Blacktail Creek Trail near California Ave shows copper accumulation at the surface. This area is overlying the Northside Tailings (EPA 2004) and the blue copper on the surface is clearly seen on recent aerial photography (Google Earth). The public is concerned about human exposure, especially children, to contaminated surface soils such as these. The soils also show a significant problem with the waste left in place decision for the Metro Storm Drain buried wastes in that the buried metal waste can wick to the surface, leaving metal precipitates which humans are exposed to and which can be washed away during storm events.

The 5-Year Review should also evaluate the effects that waste left in place has on water quality if the integrity of caps are compromised. Analytical testing of surface water runoff and groundwater leaching of contaminants from capped areas should be recommended in the 5-Year Review and provisions made if exposure to contaminated water can occur or if contaminants are determined to be mobilizing and impairing surface water quality.

7. The community needs certainty that Berkeley Pit water treatment remedy is ready for use when the Pit reaches the critical water level in 2023.
The Horseshoe Bend Water Treatment Plant has seen only minimal shakedown testing. A rigorous and long term test of the treatment capability is needed to ensure that water quality standards will be met when the plant is operating. The Pit is expected to reach the critical water level in 2023, shortly after the next 2020 Five Year Review. Additional testing of the plant must be performed during this interim so that any problems can be identified in the next Five Year Review and so that solutions are up and running significantly prior to the Pit reaching the critical water level.

There is also concern that discharge from the plant will cause gypsum scaling of Silver Bow Creek. The public has been told that EPA and Montana Resources are working on review of scaling question but has not been informed how or when that is being evaluated and the results. The Five Year Review should specifically address what is being done and provide a schedule for the public to have the results of this review prior to the next Five Year Review.

8. Remedial investigation of the Westside Soils Operable Unit must begin.
The 2010 Five Year Review indicated that remedial investigation of the Westside Soils OU would begin in 2013. This OU is a popular recreation area in Butte. The public is concerned that the area has not been evaluated for contaminants and risks to public health. The OU also drains to Silver Bow Creek and may contribute contaminants which cause water quality standards to be exceeded or present a risk of recontamination of the restored creek. Work on the OU must begin in next year. The Five Year Review should identify this as a goal and present a timeline for remedial investigation.

9. 2011 Unilateral Administrative Order and Remedy Work Plan.
The UAO Partial Remedy Implementation Work Plan guided work through 2013. The community needs to know what requirements and schedule is driving the current and future work at the site.

10. The Five Year Review Protectiveness Statement needs transparency.
Disconnect between the data presented and conclusions made in previous Five Year Reviews have not helped the public to follow statements regarding how the actions completed to date indicate that long-term protectiveness is achieved. The connection between the data and conclusions needs to be made clear. Previous Five Year Reviews have also relied on the expectation that someday all goals will be met and when that occurs that the remedy will be protective. The Five Year Review needs to evaluate the current status of the remedy and identify the risks to the public and the environment that currently exists.

References

AR, 2013. Wet Weather Compliance Ratio Charts. Downloaded from http://bpsou.com/site/documents.php.

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